

Vol. 18. No. 2. pp. 57-104
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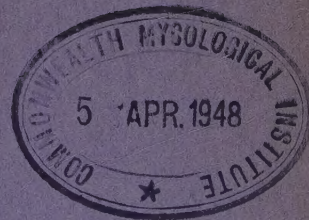
February, 1948



THE VETERINARY BULLETIN

1948

COMMONWEALTH BUREAU OF ANIMAL HEALTH
WEYBRIDGE, SURREY
ENGLAND



Price 5/- net

Annual Subscription £2

Commonwealth Agricultural Bureaux.

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THE VETERINARY BULLETIN

Vol. 18.]

February, 1948.

[No. 2.]

DISEASES CAUSED BY BACTERIA AND FUNGI

McDIARMID, A. (1946.) **Studies on enzootic staphylococcal infection in lambs associated with tick-bite. II.—The bacteriology of the disease.**—*Vet. Rec.* 58. 243-244. [For part I, see *V. B.* 16. 63.] 241

M. examined 19 strains of staphylococci isolated from cases of tick pyaemia. Four of these strains were coagulase negative, produced no toxin, were not pathogenic to mice and produced very pale pigment. The remaining 15 strains were coagulase positive, were pathogenic to mice and produced orange pigment; 13 of them produced $\alpha\beta$ toxin and two produced β toxin only. The fermentation reactions are given of all the strains on 15 carbohydrates. With one exception, cross agglutination was demonstrated with all the pathogenic strains, agglutination in highest dilution being obtained with homologous sera.

The view is expressed that strains deficient in one or both toxins were not another species of staphylococcus but represented strains of *Staph. aureus* that had lost some of their virulent characters as a result of subcultivation.—ANGUS FOGGIE.

LEWANDOWSKI, T., & STAHLY, G. L. (1947.) **The influence of subculture and of streptococcal extracts on the growth rates of hemolytic streptococci.**—*J. Bact.* 53. 25-31. [Authors' summary copied *verbatim*.] 242

The growth rates, as measured by the time required for doubling the photometric density in a highly favourable medium, of five group A hemolytic streptococci, adapted to mice, ranged from 54 to 69 minutes. After 23 subcultures in a poor medium each of the five strains showed an increased growth rate in a favorable medium. The acceleration ranged from 2 to 20 minutes.

Streptococcal extracts were prepared which accelerated the growth rates of homologous, as well as heterologous, strains. In general, extracts prepared from parent cultures markedly accelerated the growth rates of parent cultures, whereas extracts prepared from subcultures markedly accelerated the growth rates of subcultures.

VAN DER SCHEER, A. F. (1942.) Over mastitis veroorzakende streptococcen. [**Streptococcal mastitis.**]—*Tijdschr. Diergeneesk.* 69. 482-486. [English, French and German summaries.] 243

This is a summary of a doctorate thesis. The characteristics of the four principal mastitis streptococci—*Str. agalactiae*, *Str. dysgalactiae*, *Str. uberis* and *Str. pyogenes* are described. These were found present in milk samples 845, 154, 73 and 20 times respectively, a proportion of roughly 75, 17, 6.5 and 1.5% respectively. The differentiation of these organisms is discussed.—J. E.

MURNANE, D. (1947.) **Third report on the treatment of infections of the bovine udder with penicillin. Treatment of persistent subclinical and of quiescent chronic *Str. agalactiae* infections and of clinical staphylococcal infections.**—*Aust. vet. J.* 23. 15-18. 244

Subclinical and quiescent chronic infections of the bovine udder by *Str. agalactiae* were eliminated from 70 (93%) of 75 quarters of 34 cows by three doses of 25,000 Oxford units of calcium penicillin in 100 ml. of sterile distilled water infused at intervals of 24 hours. Four of the five remaining infections were eliminated by a second series of three doses, and the fifth by a third series of three doses.

Penicillin was found to be relatively inefficient when tested on a group of 20 clinical staphylococcal infections. Only two infections were eliminated by 25,000 units daily for six days.

—D. F. STEWART.

PARKIN, I. E. (1946.) **Mastitis prevention.**—*Rep. N.Y. St. Ass. Milk Sanit., 1945.* pp. 187-193. Discussion pp. 193-198. 245

P. defines mastitis as any heat or swelling in the udder or passing of abnormal milk and then instances the results of a monthly bacteriological examination of 1,600 cows during lactation as a result of which it could be said that the mastitis organisms were found at some period in the udder of every cow. He maintains that mastitis pre-

vention depends on good herd management and discusses this subject in some detail.

The ideal requirements of a cow-shed are given and the care of the cow is described. Feeding is of first importance and food rich in vitamin A should be given because of its power of preventing mastitis. Only cows of sound constitution should be kept; those with histories of trouble at calving should be milked for some time before parturition.

Common faults in hand-milking likely to cause mastitis are emphasized and machine-milking technique is discussed. P. claims that one man can manage only one unit. "Managed milking" is described as consisting of a hot-towel massage, a strip-cup test, a wait of 2-2½ min. before putting on the machine and its removal when the cow is milked out (generally in another 3 min.). Using this routine one man can milk 16-18 cows in an hour.

Cows must be protected from inclement weather and injuries.

P. refers to several herds in which the incidence of mastitis was markedly reduced by careful herd management.

In a discussion on the paper FINCHER disagreed with P. in that he maintained that many cows remained free from *Str. agalactiae* over many lactations. In general, he agreed that herd-management was more important than means of control based on identifying the bacteria involved.

—C. D. WILSON.

PERL, A. F. (1945.) **Anthrax: its incidence and therapy.**—*Canad. Med. Ass. J.* 52. 592-600. 246

Cases of anthrax in both domestic animals and human beings are rare in Canada. Since 1918 there were never more than four outbreaks per annum in the Dominion. Thirty-seven cases in animals and 24 human cases have been reported since 1920. Serum therapy is recommended but it must be given early and in large doses. Sulphonamides have given good results. Penicillin in the quantity used did not appear to be of much value.

—R. GWATKIN.

JANEČEK, F. (1946.) Vliv nasyceného roztoku hydroxydu vápenatého na vitalitu spor anthraku v prostředí vodném a bílkovinném. [Viability of anthrax spores in a saturated solution of calcium hydroxide in water or diluted horse serum.]—*Čas. československ. Vet.* 1. 73-74. 247

Sporulated *B. anthracis* culture, with and without the addition of horse serum 1:10, kept in saturated calcium hydroxide was viable up to 75 days.—E. PŘIBYL.

GOUGEROT, L. (1945.) Recherche du bacille de

Koch par la méthode des mousses. [Finding Koch's bacillus by the foam method.]—*Ann. Biol. clin.* 3. 252-254. [Abst. in *Bull. Hyg., Lond.* 21. 299. (1946), slightly amended. Signed: J. F. CORSON.] 248

Tubercle bacilli in urine can nearly all be removed in the froth produced by bubbling air through the urine; the lipoid envelopes of the bacilli are not moistened by watery liquids and this is why they are removed when the surfaces between the air and the liquid are multiplied by producing froth. The apparatus used by the author is shown in a diagram. A current of air, controlled by a stop-cock, passes through a cotton-wool filter and bubbles through 250 to 500 cc. of urine in a beaker; the froth passes up a tall funnel-shaped tube and is broken at the recurved tip by applying octyl alcohol on a platinum loop, the resulting liquid being collected in a centrifuge tube. Cleanliness of the apparatus is essential and "Pyrex" glass ware is used and heated for at least 2 hours at 200°C.

The author has found tubercle bacilli by this concentration method in the urine of six patients when the usual methods failed. It can also be used for sputum or pleural fluid, with appropriate modifications but in the latter case it is not very satisfactory.

HOLM, J. (1946.) **Tuberculosis control in Denmark.**—*Publ. Hlth Rep., Wash.* 61. 1426-1448. 249

Active control of tuberculosis began in Denmark in the early years of this century and now every county has its own independent institute for the control of the disease. Prior to the second world war, Denmark was the country with the lowest mortality from tuberculosis, the rate being only 3.4 per 10,000 of the population; this rate has remained practically unchanged between 1940 and 1945. The diet of the people of this agricultural country is in general adequate and also, since 1933 every person over 14 years of age has been obliged by law to become a member of a sick benefit club.

For over ten years it has been the custom to perform a uniform tuberculin test (Mantoux) on every person examined for tuberculosis, in order to secure that every person who is a non-reactor receives a BCG vaccination. Importance is attached to frequent bacteriological examination of the sputum and X-ray examination of the patient.

Little headway was made in eradicating tuberculosis from the cattle until the middle of the thirties. Some districts were heavily infected, but now, except in south and west Jutland, the incidence is low. The transmission of infection from cattle to man has taken place indirectly

through the milk, and directly as a result of contact with tuberculous animals. Transmission through milk results in many cases in an infection which manifests itself by a positive tuberculin reaction, it is only in exceptional cases, particularly in infants, that it causes tuberculous lesions. On the other hand, infection from direct contact with infected cattle has produced genuine tuberculous lesions in a high percentage of cases. Where tuberculosis in cattle was common, nearly half the cases of pulmonary tuberculosis in farmers were due to the bovine bacillus. As the disease in cattle diminishes, the incidence of bovine infection in man also declines. After remaining in the human body for some time, the bovine type of bacillus will change in character in such a way as to be diagnosed as the human type.—D. S. R.

I. BLACKLOCK, J. W. S. (1947.) **The epidemiology of tuberculosis.**—*Brit. med. J.* May 24th. 707-712. 250

II. ANON. (1947.) **The epidemiology of tuberculosis.**—*Ibid.* May 24th. 726-727. 251

I. B. points out that the cycle of infection by human and bovine types of tubercle bacilli is more complicated than was formerly suspected. Human type bacilli are not only transferred from man to man, but may also be transferred from man to cattle, while the bovine infection is not only spread among cattle, but may be transferred from cattle to man, from man to man and again from man to cattle. The ways of infection of both the human type and the bovine type are then discussed and figures of the frequency of respiratory and alimentary infection in the various ages and in rural and town populations are given. In his conclusions B. mentions briefly the various ways of controlling human and bovine infections.

II. In this article recent work on TB. is discussed, from which better knowledge emerged concerning the source of infection in children. It has been shown that infections with the bovine type of bacillus are more frequent than was supposed in former times, a fact particularly illuminated by investigations in rural districts with good and bad records of the cattle. The doctrine of VON BEHRING and CALMETTE, that the route of infection in infancy is mainly alimentary, has been refuted in this newer work and the danger of lung infection through inhalation has been revealed.

—E. KLIENEBERGER-NOBEL.

DUNGAL, N. (1945.) **Occurrence and manifestations of tuberculosis in Iceland.**—*Acta tuberc. scand.* 19. 275-308. [In English.] 252

The author states that bovine TB. is unknown in Iceland, that all TB. in man in Iceland is of human origin. 600 cultivated strains were all of the human type.

BELLER, K. (1944.) Zur Frage des Nachweises und der Pathogenese der Tuberkulose. [**The symptoms and pathogenesis of TB.**]—*Berl. Münch. tierärztl. Wschr.* [Wien. tierärztl. Mschr. July 7th. 217-218. 253

In tuberculous cattle bacteraemia may occur without the manifestation of overt signs of infection and in the absence of early demonstrable lesions. B. emphasizes that in meat inspection such cases would pass an ordinary visual examination.—E. KLIENEBERGER-NOBEL.

HEDSTRÖM, H. (1941.) Etiologiska undersökningar av s.k. hudtuberkulos hos nötkreatur. [**Investigations into the etiology of so-called skin tuberculosis in cattle.**]—*Skand. VetTidskr.* 31. 577-589. [English summary.] 254

H. has examined 288 material samples since 1937 from cases of "skin TB.", sent for diagnosis from nearly all provinces of Sweden. There was a marked tendency to local eosinophilia of the tissue around the lesions.

Microscopic examination has revealed alcohol- and acid-fast bacteria, including coccoid, oval and bacillary forms. G. pig inoculation was carried out with 166 samples. In two instances infection with the classical tubercle bacillus resulted, but it was considered that the infection may have been derived from P.M. contamination of the samples in one case and confusion about the identity of the origin of the sample in the other. The remaining 164 samples gave negative results in g. pigs and many of them also in rabbits, fowls and cattle. Cultural tests mainly on egg medium containing alanine and galactose, after preliminary treatment of the seed material with 5% sulphuric acid for 20 minutes, resulted in growth of alcohol- and acid-fast bacilli in 34 instances (14.3%).

Detailed studies on these bacteria showed them to be closely related to *Mycobact. luteum* but more strongly alcohol fast. Two strains resembled *Mycobact. lacticola*. Inoculation tests on various species of animals, with both types yielded negative results. A metabolic product prepared on the lines of tuberculin was produced and applied in allergic tests on cattle in herds in which cases of "skin TB." had been observed, but only weak reactions were at any time obtained. It was concluded that the bacteria isolated were non-pathogenic and presumably not the cause of the skin lesions.

In the course of more recent work cases of "skin TB." were investigated using mycological methods and in nine of 20 samples yeast-like organisms were isolated. These grew quickly in Sabouraud's medium and formed raised glistening white colonies at 28°C. and the commonly used sugars, alcohols or glucosides were not attacked. It is considered that they may be the cause of the

"skin TB.": evidence is being collected.—J. E.

ANON. (1947.) **"Skin tuberculosis" of cattle.**

—*J. Minist. Agric.* **54.** 197–198. **255**

An apparently harmless condition in cattle is misleadingly called "skin TB.". Affected animals exhibit nodules in various places which may be situated in or under the skin. So far the cause of the infection and the conditions of its transmission are unknown. The majority of affected animals show no evidence of true TB. The condition, however, has some bearing on the sensitivity to the tuberculin test since the affected animals yield positive reactions. With the methods of interpreting the results of tuberculin testing now in use, the danger that affected cattle may be wrongly condemned seems small.—E. KLIENEGER-NOBEL.

RODER, F. (1947.) **Cellular resistance to pulmonary tuberculosis and pulmonary intravascular pressure.**—*Amer. Rev. Tuberc.* **55.** 498–501. [Spanish summary.] **256**

In disagreement with Dock's explanation the lower resistance against TB. of the apices of the lung lobes, in contrast to other parts of the lungs, is explained by the diminished intravascular pressure in these parts which accounts for the lowered "cell resistance".—E. K.-N.

AUKEMA, C. (1942.) **Aangifteplicht voor runderen, die lijden of verdacht zijn te lijden aan open tuberculose. [The duty of notification in cases of bovine TB.]**—*Tijdschr. Diergeneesk.* **69.** 56–58. **257**

This is largely polemical, with an argument pointing out the differing incidence of open TB. in the various parts of Holland, hence the desirability of a regulation concerning notification and suited to local conditions. Thus in heavily infected districts it is not regarded as feasible for every case of open TB. to be reported because the aggregate loss from obligatory slaughter would be insupportable. A. nevertheless advises that compulsory notification should be enacted.—J. E.

— (1942–45.) **Arrêtés du Conseil Fédéral concernant la lutte contre la tuberculose de l'espèce bovine. [Decrees of the Federal Council for the control of bovine tuberculosis.]** pp. 18. Berne, Switzerland: Conseil Fédéral. **258**

Legislation was introduced in 1942 by the Federal Government endowing the Cantonal authorities with executive power for the control of TB. in cattle. The cantons are authorized by the Federal Government to institute an insurance scheme to be run conjointly with the cantonal tuberculosis control, the cost of the insurance to be levied from the individual owners. When cattle have to be disposed of, the owner may receive up

to 80% of their value. The Federal Government pays 50% of the expenses incurred by the scheme to the Canton. Although the scheme is on a voluntary basis the Government may make the scheme compulsory in any one district where the number of farmers who enter it is sufficient. The veterinary service of the Canton must first certify that the herd is a suitable one, then all the cattle on the premises over four weeks of age are examined clinically after which all are submitted to an intradermal tuberculin test. Should all the animals pass this test, then another test is carried out in not less than five months' time, and if again there are no reactors, then the herd is considered tuberculosis-free, and testing is not done again for a year. All reactors to the test must be disposed of.

Until the official control work is commenced, any reactors may be disposed of without any marking, but once control work has commenced all reactors must be suitably marked. The owner may dispose of these privately if he wishes, but if the animals are taken over by the State, compensation is allowed.

Instructions as to the carrying out of the test, fees to be charged for the veterinary work and prices which can be allowed for the carcasses are all laid down, along with regulations for the control of the herds in the scheme.—D. S. RABAGLIATI.

ABAZA, M. S., & SAMI, A. (1947.) **Tuberculosis in Egypt.**—*Tubercle, Lond.* **28.** 10–14. **259**

This is a general survey of tuberculosis as it affects the population of Egypt. 65% work on the land, in plenty of fresh air and sunlight but the standard of living conditions is low. The exact incidence of tuberculosis in buffaloes is not known; they are the main source of the meat and milk supply. In Alexandria the records show that 60% of the cattle slaughtered show tuberculous lesions. Bone, joint and other forms of extra-pulmonary tuberculosis in man are common, but no work has as yet been done on the incidence of the causal type of tubercle bacillus. Milk is less frequently a source of infection in Egypt than in Gt. Britain and the incidence of bovine type infection in man is less owing to the much smaller milk consumption and according to custom, it is usually boiled before use.—D. S. R.

WIDSTROEM, G. (1941.) **The problem of vaccination against tuberculosis. An experimental study.**—*Acta med. scand.* Suppl. No. 124. pp. 5–87. [In English.] **260**

Experiments were undertaken to determine the immunizing value of various fractions of the tubercle bacillus. Cultures of BCG dried from the frozen state were ground in a ball mill at –60°C. and extracted with watery solutions.

Rabbits vaccinated with the organisms before extraction, with the watery extract, with the residue after extraction and with living BCG respectively, were infected with 53×10^6 virulent bovine bacilli intravenously. The survival time in groups receiving dried bacilli before extraction was about equal to the unvaccinated controls (18.4 days, $SD \pm 6.6$) but the other groups showed some resistance which was statistically significant.

The experiment was repeated in g. pigs, except that vaccination with living BCG was carried out at two levels, *viz.*, 100×10^6 and 400×10^6 organisms. The animals were infected with a small dose given intracerebrally. The only group showing any evidence of immunity was that receiving the smaller dose of living organisms.

A similar experiment was undertaken with an avirulent avian bacillus. The immunity was tested by the intravenous inoculation of 20×10^6 organisms. The controls and those receiving the watery extract died in about 30 days, but those receiving the residue after extraction and living attenuated bacilli showed an enhanced resistance (death delayed to 54–58 days).

By increasing the test dose a Yersin type of reaction was produced. In order to obtain consistent results in the controls it was necessary to use pure-bred white rabbits of about 2,000 g. in weight. Additional immunizing fractions were included with the following results. Large and small doses of dried bacilli had no immunizing action, but an intermediate dose gave some immunity, a clear indication that optimum dosage is desirable. Dried bacilli treated with HCl at pH 1.8 and with NaOH at pH 10.1 gave as good a protection as the avirulent organism; this fact is ascribed to the hydrolysing or dispersing effects of the reagents. The watery extract, though less effective, was better than the original dried bacilli. Treatment with various fat solvents such as ether and alcohol, gave products with no appreciable protection.—R. E. GLOVER.

LESHCHINSKAYA, E. N. (1946.) **The immunizing value of the BCG dry glucose vaccine.**—*Amer. Rev. soviet. Med.* 3. 210–215. [Translation of article in *Probl. tuberc.* 21. 55–59. (1944).] 261

A fourteen day old culture of BCG on Santon's medium was emulsified in 50% glucose solution, freeze-dried in 5 ml. ampoules at -18°C . and sealed under a high vacuum 24 hrs. later. The ampoules were stored at room temperature which varied from 25°C . in summer to -30°C . in winter. Fifteen months later it was found to be viable when subcultured on Petragnini medium.

The immunizing action of 18-month-old freeze dried cultures was tested on g. pigs and compared favourably with that of fresh culture as

judged by the reaction of the g. pigs to the Mantoux test. The vaccinated g. pigs were injected with 0.00001 mg. of virulent culture 2 months + 10 days later. The *postmortem* findings are given and indicate that the freeze dried vaccine gave results which compared favourably with those given by fresh vaccine.

It is concluded that the use of dry vaccine will make it possible to centralize production and to extend the use of BCG to distant parts of the U.S.S.R.—M. C.

— (1947.) **Review of the immunizing value of the BCG dry glucose vaccine.**—*Publ. Hlth Rep., Wash.* 62. 211–213. 262

This is a review of the work described in the previous abstract.

MØLLER, P. (1944.) **Calmette vaccination of guinea-pigs by scarification ad modum Nègre and Bretey.**—*Acta path. microbiol. scand. Suppl.* No. 54. pp. 135–146. [In English.] 263

In experiments on rabbits M. compares the scarification and the intracutaneous injection methods of using BCG vaccine. Though the scarification method seems to produce slightly inferior results than the injection method it has other advantages, *i.e.*, it covers a larger area, a more limited number of bacteria is introduced and in consequence it does not produce such a violent tissue reaction as the injection method and above all it is easier to perform.—E. K.-N.

ANON. (1947.) **B.C.G. vaccination.**—*Brit. med. J.* Sept. 20th. 464. 264

At the International Conference of Physicians vaccination with BCG was discussed. Three Scandinavian workers advocated this method and gave a record of the results with this vaccination in the three Scandinavian countries. G. S. WILSON offered some criticism and pointed out that the value of the method was not yet statistically proved. A general discussion followed.

—E. KLIENEBERGER-NOBEL.

FERGUSON, R. G. (1946.) **BCG vaccination in hospitals and sanatoria of Saskatchewan. A study carried out by the National Research Council of Canada.**—*Canad. J. publ. Hlth.* 37. 435–451. 265

Immunization of nurses with BCG vaccine reduced the ratio of infection to 1 : 4.27 in general hospitals and 1 : 5.03 in sanatoria as compared with unvaccinated nurses all having been free from infection on entering. BCG was free from danger, but was not 100% effective although its protection was very considerable. In the vaccinated group the lesions were less extensive than in unvaccinated persons. The serious situation that was developing during the 1930–38 period has been improved since vaccination was

commenced in September, 1938.—R. GWATKIN.

*TÜRK, E. (1942.) Ueber BCG-Immunität gegen kutane Infektion mit virulenten Tuberkelbazillen. [BCG-immunity against cutaneous infection with virulent tubercle bacilli.]—*Med. Klinik*. No. 36. p. 846. [Abst. from abst. in *Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* August 20th. 286. (1943).] 266

T. reports experiments to test the immunity conferred by BCG on three infants respectively 4, 14 and 19 weeks injured at birth and stated to have no chance of survival. The two younger ones were inoculated with BCG and all three were deliberately given an infective dose of tuberculous infection. The unvaccinated baby developed a primary TB. complex; the other two did not.

—E. KODICEK.

BOQUET, A. (1946.) Sur les variations de l'allergie chez le cobaye sensibilisé par inoculation intradermique de BCG. [Tuberculin reactions in g. pigs sensitized by BCG.]—*C. R. Soc. Biol. Paris*. 140. 353-354. 267

A BCG vaccine had a very high sensitizing effect on g. pigs and this can well be compared to the sensitization of TB. infected animals. Provided that healthy adult g. pigs weighing between 500 and 600 grms are used, the BCG sensitized animals can replace the TB. infected g. pigs for the assessment of tuberculin titres.

—E. KLIENEBERGER-NOBEL.

DELBOVE, P., & REYNES, V. (1947.) Recherches expérimentales sur l'évolution simultanée de l'infection tuberculeuse et des infections typho-exanthématiques chez le cobaye. [Simultaneous infection of g. pigs with TB. and rickettsia.]—*Ann. Inst. Pasteur*. 73. 439-450. 268

In these studies g. pigs were infected with tubercle bacilli and later superinfected with three different strains of rickettsiae. The course of the typhus infection was little altered by the simultaneous TB. infection. The mortality through typhus was reduced in the superinfected g. pigs. The course of the TB. infection was slowed down in the superinfected animals. The immunity produced through the typhus infection was slightly altered in the case of the murine virus only, while the allergic condition, as revealed by an intradermal dose of tuberculin, disappeared at certain stages of the typhus infection.—E. K.-N.

GASTINEL, P., & NEVOT, A. (1947.) Influence sur l'apparition de l'allergie cutanée chez le cobaye de la voie d'inoculation des bacilles tuberculeux. [The influence of the route of infection on the development of sensitization in TB. g. pigs.]—*Ann. Inst. Pasteur*. 73. 485-488. 269

In a study involving the use of g. pigs it was

found that sensitization proper was only produced when animals were infected with tubercle bacilli by the subcutaneous or intramuscular methods; but when the bacilli were inoculated into the testis, the trachea, a vein or into the peritoneum, sensitization did not develop.—E. K.-N.

RAFFEL, S. (1946.) The relationship of acquired resistance, allergy, antibodies and tissue reactivities to the components of the tubercle bacillus.—*Amer. Rev. Tuberc.* 54. 564-573. [Spanish summary.] 270

An attempt was made to relate resistance to TB. as well as tuberculin sensitivity to various specific chemical portions of the tubercle bacillus. It has been shown that tuberculin allergy can be produced by the protein and wax of the human tubercle bacillus and that this hypersensitivity seems to be similar to the one acquired by the presence in the tissues of whole bacilli. Yet it was found that the g. pigs thus sensitized were not resistant to the consecutive infection with virulent tubercle bacilli. It is hoped that in future experiments resistance may be induced in the absence of hypersensitivity and that the chemical portion responsible for this effect may be established.—E. KLIENEBERGER-NOBEL.

VAN DEINSE, F. (1941.) La réaction de Takata dans la tuberculose expérimentale du cobaye. [The "Takata" reaction in experimental tuberculosis in the g. pig.]—*C. R. Soc. Biol. Paris*. 135. 607-609. 271

A positive "Takata" reaction is regarded as an indication of lesions of the liver. Several authors found the reaction positive in cases of pulmonary tuberculosis and concluded that in these patients the livers were affected. In tests on the serum of TB. g. pigs the present author found that there was no relationship between a positive reaction and lesions of the liver.—E. K.-N.

SCHAEFER, W. (1946.) Préparation de protéides tuberculiniques à partir de bacilles tuberculeux bovins. [Preparation of tuberculin proteins from bovine type *Mycobact. tuberculosis*.]—*C. R. Soc. Biol. Paris*. 140. 435-436. 272

S. describes a method for the preparation of bovine P.P.D. tuberculin very similar to that used for human preparations in the U.S.A. by SEIBERT [see *V. B.* 12. 589]. Ten-week-old bovine type cultures were grown on Sauton synthetic medium, autoclaved at 110°C. for an hour, filtered through paper and Seitz pads, phenolized to a concentration of 0.5% and ultrafiltered (Chamberland L₁). The protein was then precipitated with 2% trichloroacetic acid, washed centrifugally with trichloroacetic acid and re-dissolved in distilled water by the addition of a few drops of N NaOH. After dialysis for 48 hours in the ice-box the protein

(N content 15-25%) was recovered in the dried state by vacuum distillation. G. pig tests indicated that the biological activity of the three bovine preparations studied was comparable with that of Seibert's human type P.P.D.—J. L. MCGIRR.

PLUM, N. (1940.) Om Infektioner med Corynebakterier i Halslymfekirtlerne hos Svin. [Corynebacterial infection of the lymph nodes of the neck in swine.]—*Maanedsskr. Dyrlaeger*. 52. 209-221, 245-264 & 276-296. 273

The literature on this infection is reviewed. On account of the confusion that it caused in the examination of slaughtered pigs for tuberculosis in Denmark, the Serum Laboratory was subsidized by the pig industry to investigate it. The incidence of the infection in swine in Denmark, methods of diagnosis and differentiation from TB. were studied, and infection tests on swine to determine the pathogenicity of the organism were carried out.

Bacteriological surveys on slaughtered swine indicated that the infection in swine is scattered widely over Denmark, the highest local incidence being 1%. The highest rate occurs on the largest pig farms.

Diagnosis by the naked eye of infected lymph nodes is insufficient for differentiation from TB., and must be supplemented by microscopic investigation. It was found that 60% of pigs with TB.-like lesions of the submaxillary lymph nodes, were not tuberculous, but had *Corynebacterium* infection. Cultural examination is the most reliable diagnostic method, the media of Löwenstein or Bezredka being used.

Numerous artificial infection tests were carried out on pigs by injecting culture intravenously, intraperitoneally, intratracheally and intrapulmonarily, and by feeding cultures. The organism proved to be practically non-pathogenic, as specific lesions were usually absent. When pigs were infected with influenza virus and corynebacteria there was a greater tendency to the production of specific lesions in the lymph nodes.

Five foals were also infected with corynebacteria from pigs, or as *C. equi* of equine origin, by the respiratory route, but none developed specific corynebacterial lesions.—J. E.

ROEMMELE. (1944.) Ein weiterer Beitrag zum Rotlaufproblem im Ostland. [*Erysipelothrix rhusiopathiae* infection in the Baltic States.]—*Z. InfektKr. Haustiere*. 60. 357-366. 274

In 1943, the influence of the weather on the incidence of swine erysipelas was again exemplified, a rise of external temperature being accompanied by an increased number of cases. In contrast to the severe winter of 1941-2, the mild winters of 1942-3 and 1943-4 were followed by

a wide extension of the disease. However, cold may occasionally precipitate cases: for example, almost all members of a large herd of sows, kept in small unsuitable sheds in severe weather, died from septicaemic erysipelas. Improper feeding, due to war conditions, was probably partly responsible for the increased incidence of the disease observed in 1943.

Although the so-called "Herztod" (syncope) of pigs had not yet been identified with certainty in the Baltic states, it was thought possible that some cases might be revealed during a routine bacteriological examination of suspected erysipelas cases. "Toxic liver dystrophy" is not uncommon.

After extensive use in Latvia in 1943, the serum-simultaneous vaccine was found to be superior to the Ukrainian formol-vaccine, and the use of the latter vaccine was found to be followed by "vaccination erysipelas" in a rather higher percentage of cases. As "vaccination erysipelas" was in some cases possibly due to transfer of material from pig to pig by the syringe needle, it is pointed out that a fresh sterile needle should be used for each pig. In the Baltic states, vaccination would have to be carried out largely with the help of lay vaccinators, and a simple, safe, effective vaccine giving lasting immunity is still to be sought.—E. COTCHIN.

KOHL, K. (1940.) Prilog poznavanju B. murisepticum. Da li je na temelju morfoloških, kulturelnih, biokemičkih, seroloških i bioloških svojstava B. murisepticum dopustiv zaključak o srodnosti ovog mikroba s B. erysipelatis suis? (Disertaciona radnja iz god. 1940.) [Concerning *Erysipelothrix muriseptica*.]—*Vet. Arhiv*. 10. 500-515. [Abst. from German summary.] 275

K. investigated the relationship between *Erysipelothrix muriseptica* and *E. rhusiopathiae*, using seven strains of *E. muriseptica* and four of *E. rhusiopathiae*. Morphological and biochemical properties and cultural characters of both were identical. In virulence tests the M.L.D. for white mice and pigeons was the same with both organisms, but *E. rhusiopathiae* caused death in pigeons sooner than *E. muriseptica*. Agglutination tests showed no difference between the two bacilli. K. concludes that these organisms are either identical or closely related.—J. H.

*HÓDOSY, J., & MURÁRYI, F. (1944.) [Experimental active immunization against fowl plague.]—*Allatorv. Lapok*. 67. No. 5. [Abst. from abst. in *Tierärztl. Z.* No. 1. p. 13. (1944).] 276

Successful experimental results were obtained with Traub's aluminium hydroxide adsorbate vaccine [*V.B.* 15. 264] against strains of fowl

plague virus, including some from inland areas.

—E. COTCHIN.

SAVINO, E., & GOOBAR, J. K. (1944.) La peste rural en el departamento de Rio Seco (Córdoba). Su estudio epidemiológico con especial referencia al *Graomys griseoflavus centralis* como depósito de virus pestoso, así como también el hallazgo de peste espontánea en algunos roedores agrestes y en gatos domésticos. [Epidemiological study of plague in Cordoba: *G. griseoflavus centralis* as reservoir of infection, and cases in various wild rodents and domestic cats. —*Rev. Inst. bact., B. Aires.* 12. 287–292. 277

The authors studied the epidemiology of an outbreak of plague in Córdoba Province, Argentina. *Pasteurella pestis* was isolated from fleas, from wild rodents and domestic cats by inoculation of g. pigs. Twenty-eight *Graomys griseoflavus centralis* were found to have a total of 60 fleas; 3 *Hesperomys murillus cordobensis* a total of 3 fleas; 34 *Galea musteloides leucoblephara* 347 fleas. From dead cats which had been buried for one to two months the authors claim to have cultivated *P. pestis*.

Two *Mus musculi* found near the infected houses proved to be flea-free. They conclude that *G. centralis* may act as a reservoir of infection and call attention to domestic cats as possible carriers.—H. G. ARAMBURU.

SUTHERLAND, A. K., & SIMMONS, G. C. (1947.) Glasser's disease of swine.—*Aust. vet. J.* 23. 91–94. 278

Outbreaks of a disease in young pigs resembling Glasser's disease are described. A bacillus of the genus *Haemophilus* was isolated from joints, peritoneal exudate, pericardial exudate or lung.

—D. F. STEWART.

BASSET, J. (1941.) Bacilles paratyphiques typhoses et colibacilloses des mammifères. Entérite infectieuse du porc (typhose porcine). [Paratyphoid and *Bact. coli* infections in mammals. Infectious enteritis of swine.]—*Rev. Méd. vét., Lyon et Toulouse.* 92. 145–175, 193–222 & 244–279, and 93. 1–19 & 57–68. 279

In this review of the salmonella infections of animals, B. deals with serological reactions, virulence and toxicity, with particular reference to *S. cholerae-suis* as the cause of infectious enteritis in pigs. He expresses some unorthodox views on classification, maintaining, for example, that the separation of *S. cholerae-suis* from *S. paratyphi B* is not justified, since *S. cholerae-suis* is capable of causing a typhoid-like disease in man. B. is of the opinion that vaccination cannot be depended upon in prophylaxis. Hygienic measures and adequate nutrition, especially an ample

supply of milk, are of great importance.—D. L.

DAVID, W. (1944.) Beobachtungen über Vorkommen und Pathogenität des Bact. Newport bei Haustieren, insbesondere beim Rind. [The Occurrence and Pathogenicity of *Salmonella newport* in Animals, especially in Cattle.]—*Z. InfektKr. Haustiere.* 60. 259–266. 280

Evidence has been brought forward that cattle are highly susceptible to *Salmonella newport*. Yet the infected animals did not show any characteristic evidence of infection though they were mostly seriously affected. It was not possible to elucidate the source of the infection or to find other carrier animals besides cattle. It was shown that the organisms may be eliminated up to a period of four weeks by healthy adult animals. Calves did not seem to be particularly susceptible.—E. K.-N.

PRIESTLY, F. W., & ARTIOLI, D. (1946.) Scours in buffalo calves.—*Vet. Rec.* 58. 209–211. 281

Following a reported high mortality in buffalo calves, about one month old, from symptoms suggestive of rinderpest, and the ineffective use of serum, 283 buffalo calves born consecutively on various farms in the area were observed for 14 days after birth. Death up to the first two days after birth was attributed to errors in diet. 50% of the total died within 14 days of birth from infection by an organism resembling *S. typhi-murium*; a small number of month-old calves died from an infection with *S. dublin*. 27.9% lived for over 14 days.

The bacteriology, fermentation and serological reactions of the organisms isolated are given. The organisms were most commonly isolated from the mesenteric glands: cultures were obtained from other material, but not invariably.

The pathology of the condition produced by the *S. typhi-murium* type of organism is described. The characteristic lesions were pronounced enteritis, enlargement, rubbery consistency and haemorrhagic spots in the spleen, enlargement of lymph nodes, particularly the mesenterics, and gelatinous oedema in the pelvis of the kidney. In cases of early death, up to 48 hours, lesions were slight and might be overlooked. The pathology of *S. dublin* infection in buffalo calves is not described.

Attempts to produce immune serum in rabbits and one adult bullock, revealed the high lethal property of the toxin of the *S. typhi-murium* strains; attempts to confer passive immunity to this organism in calves, by the use of serum from buffaloes were not successful, but the use of high titre normal serum is advocated in an emergency. Efforts were made to stimulate immunity by vaccination with both organisms, but

were not successful. Vitamin therapy with nicotinic acid was unsuccessful, but the administration of cod liver oil improved the condition of infected calves and inhibited conjunctivitis, which is common in calves affected with this type of "scours".

Agglutination tests indicated that the source of infection with the *S. typhi-murium* type of organism was probably the adult buffalo.—J. G. B.

VARELA, G., & OLARTE, J. (1946.) **Transmission of *Salmonella enteritidis* by *Pulex irritans* and *Ctenocephalus canis*.—*Science*. 104. 104–105. 282**

Pulex irritans and *Ctenocephalus canis* were fed on mice which had been infected intraperitoneally with *S. enteritidis*. It was possible to isolate the organisms from the macerated fleas 24, 48 and 96 hours after they had fed. Infected fleas were allowed to feed on susceptible young mice but no symptoms were present one month later. Cultures were negative from mice spleens on the 1st, 2nd, 4th, 6th, 20th and 30th days after being bitten.—D. LUKE.

DE MACEDO, L. R. T. (1946.) Isolamento da "Shigella Gallinarum" e notificação de um surto de tifo aviário no estado do rio. [Isolation of *Salmonella gallinarum* and notification of avian paratyphoid in the State of Rio.]—*Biol. med., Rio de J.* 3. 159–164. 283

An outbreak of *S. gallinarum* occurred in a flock of Peruvian and Angolian fowls, killing over 100. The "rapid agglutination" test for *S. pullorum* failed to detect *S. gallinarum* infection.

—R. MACGREGOR.

BENDIXEN, H. C., & BLOM, E. (1947.) **Investigations on brucellosis in the bovine male, with special regard to spread of the disease by artificial insemination.—*Vet. J.* 103. 337–345. 284**

A case of brucella infection of the ampulla of the epididymis of a bull used for artificial insemination was discovered in 1942. This bull had caused positive agglutination reactions in 71% of cows in brucella-free herds which he had served. Following this case a detailed investigation of bulls used for A.I. and for natural service was undertaken. This paper gives the results obtained in the two-year period 1942–44 during which a total of 1,109 specimens of semen and 552 blood samples from 394 bulls were examined. Semen samples were sent to the laboratory in thermos flasks with crushed ice and were tested as follows:—Macroscopically by the catalase test; microscopically after staining; by the agglutination test of the semen plasma; by culture and by inoculation into g. pigs. 58 of the 394 bulls were positive to the agglutination test of their

blood, 80 of these gave a positive result to the agglutination test of the semen plasma and in 15 brucella organisms were demonstrated in the semen. In five bulls pathological changes in the semen, not caused by brucella infection, were found.

In those bulls which were positive to the blood test but negative to tests of the semen the titres were low, from 1:10 up to 1:160. 18 of the bulls which were positive to semen tests were brought to the Veterinary College for more detailed examination, the results of which are tabulated. It was found that the presence of agglutinins in the semen plasma indicates with a high degree of certainty that focal brucella lesions are present in the genital organs. The brucella content of the semen is highest during the acute stage of the infection; this stage may last for several weeks. Spread of infection in four separate instances by infected bulls used at A.I. centres was found. The necessity for repeated tests of blood and semen samples from bulls at A.I. centres is pointed out. Macroscopic evidence of alteration in the semen should result in immediate discontinuance of the use of the bull in question until a thorough examination has been made.—M. C.

DAMON, S. R., & FAGAN, R. (1947.) **Isolation of *Brucella melitensis* from cow's milk.—*Publ. Hlth Rep., Wash.* 62. 1097–1098. 285**

In tracing up the milk supply of a case of undulant fever in the U.S.A. it was found that of nine cows in the herd in question eight were reactors to the agglutination test, and that four of them had aborted. *Br. melitensis* was isolated from one of the g. pigs inoculated with samples of milk drawn from the cows. No further studies of the cows were possible after this finding because in the interim they had been slaughtered.

The authors say that similar findings have been previously reported from New York and California.

An organism isolated from the human patient was typed as "aberrant abortion".

DOWNES, C. M., CORIELL, L. L., CHAPMAN, S. S. & KLAUBER, A. (1947.) **The cultivation of *Bacterium tulareense* in embryonated eggs.—*J. Bact.* 53. 89–100. [Authors' summary slightly amended.] 286**

An accurate surface plate count method for *Pasteurella tularensis* is described.

Past. tularensis multiplies abundantly in the tissues and fluid of the embryonated chicken or duck egg. Multiplication is greatest in the yolk sac, particularly after yolk sac inoculation. The property of virulence affects the multiplication of the organism in the embryonated egg and the

survival of the embryo. The virulence of *Past. tularensis* for chick embryos is enhanced on serial passage through embryonated eggs. Storage in the frozen state or in the cold preserves, for a period of 8 months, approximately 1.0 per cent of the original number of organisms present.

LEWIS, K. H., & HILL, E. V. (1947.) **Practical media and control measures for producing highly toxic cultures of *Clostridium botulinum*, type A.**—*J. Bact.* 53. 213-230. [Authors' summary copied *verbatim*.] 287

Practical liquid media, composed of readily available and relatively inexpensive ingredients, have been developed for the production of highly toxic cultures of the "Hall" strain of *Clostridium botulinum* (type A).

The peptones usually employed in culture media can be replaced by 0.25 to 0.5 per cent casein (technical grade) or 2 per cent powdered skim milk.

Clarified corn steep liquor (0.2 to 0.4 per cent total solids) is a more adequate supplement than yeast extract for toxin production in casein or milk media, as demonstrated by relative viabilities and toxicities after 4 to 6 serial transfers in media containing these materials.

The presence of available carbohydrate in the form of 0.2 to 0.6 per cent commercial glucose (cerealose) markedly increases the total yield of toxin and enhances its stability in the culture medium by retarding reversion of pH toward the alkaline side.

The milk, corn steep liquor, glucose medium yields 500,000 to 1,000,000 MLD of toxin per ml. of culture when inoculated with 2 per cent of an actively growing culture of *C. botulinum* (type A, Hall strain) and incubated in a quiescent state at 34°C for 24 to 48 hours. Small inocula or mild agitation tend to retard toxin production, and the latter may greatly inhibit its accumulation.

Characteristic changes in pH, concentration of reducing substances, and levels of nonprotein nitrogen occur during incubation of the culture. The relationships of pH and reducing substances to rapidity of accumulation and stability of toxin provide valuable control measures for securing the maximum yield of active toxin.

BATTY, I., & GLENNY, A. T. (1947.) **Titration of *Cl. welchii* epsilon toxins and antitoxin.**—*Brit. J. exp. Path.* 40. 110-126. 288

Since the observation that *Cl. welchii* Type D filtrates increase in toxicity in the presence of trypsin, it has been established that the antigen present consists of a mixture of proto-toxin and toxin. Toxicity tests of filtrates are, therefore, not of much value, but tests for combining power with antitoxin are of special importance as the proto-

toxin has the same combining power as the toxin.

It was found that the flocculation reaction provides a satisfactory method of determining the total antigen content of *Cl. welchii* epsilon toxins provided that the antiserum used has been refined by the pepsin process. Trypsin activated or unactivated toxins may be used for this test but only activated trypsin toxins are suitable for titration by means of the g. pig skin test.

Titration of antitoxins should always include animal experiments to ensure that the antitoxin can prevent typical symptoms and death and further experiments showed that the combining power of toxin or the antitoxic value of sera can be measured by intravenous injections into mice. Antitoxic sera differ in the degree of firmness with which they combine with toxin and on injection of such mixtures, the toxin is slowly liberated so that deaths may occur in the test animals although the flocculation reaction indicates that the toxin is over-neutralized. It is essential, therefore, to determine the lethal index for each titration.

—J. A. NICHOLSON.

DOLMAN, C. E., & KERR, D. E. (1947.) **Botulism in Canada, with report of a type E outbreak at Nanaimo, B.C.**—*Canad. J. publ. Hlth.* 38. 48-57. 289

Three fatal human cases of botulism at Nanaimo, B.C., are reported. The source of the outbreak was traced to improperly processed home-canned salmon. *Cl. botulinum* type E was isolated from similar tins of salmon found in the house and from soil taken from a nearby chicken-run.—P. J. G. PLUMMER.

VAN DEN BERGHE, L., & HOFFMAN, J. (1945.) **Recherches histochimiques sur la nature des *Bartonella*. [Histochemical nature of *Bartonella*.]**—*Bull. Soc. Path. exot.* 38. 195-197. 290

It has been shown that the basophilia of blood cells and particularly the punctate basophilia of erythrocytes is due to ribonucleic acid, which can be removed by the ferment ribonuclease of ox pancreas. Exposure of blood smears from rats infected with *Bartonella* to ribonuclease does not remove these bodies, which must thus be considered quite distinct from the polychromatophilia observed in rats after splenectomy. This evidence confirms that *Bartonella* is a parasite and not a chromaphilic degeneration of the corpuscles.

—U. F. RICHARDSON.

STAUB, A. (1947.) **Un milieu sterilisable a l'autoclave pour la culture du microbe de la peripneumonie. [A medium for cultivation of the pleuropneumonia organism.]**—*Ann. Inst. Pasteur.* 73. 430-432. 291

Fresh serum in a culture medium for the pleuropneumonia organism was replaced by

formalized horse serum. Organisms grown in this medium when injected into a calf produced no local or systemic reaction. The same calf did not react to a strain of pleuropneumonia grown with fresh serum.

The author concludes that it is possible to prepare a medium capable of being sterilized in the autoclave and in which the pleuropneumonia organism will grow.—S. BRIAN KENDALL.

CAICEDO AGUILAR, R. (1945.) Necrosis bacilar en los animales y difteria en los terneros. [Bacillary necrosis in animals and calf diphtheria.]—*Rev. Med. vet., Bogotá*. 14. 51–55. 292

The author gives the following technique for the isolation of pure cultures of the necrosis bacillus:—Dip a portion of the necrotic tissue in alcohol and ignite it. Incise deeply with a sterile knife and place in liver broth under anaerobic conditions. Incubate at 37°C. for 24 hours. A highly satisfactory vaccine can be prepared by killing such cultures with chemicals. [No further details given.]—R. MACGREGOR.

FEINER, R. R., MEYER, K., & STEINBERG, A. (1946.) Bacterial lysis by lysozyme.—*J. Bact.* 52. 375–384. 293

Cultures of *Micrococcus lysodeikticus* from different sources were identical culturally, but differed serologically. All the cultures showed the same sensitivity to egg-white lysozyme. From *M. lysodeikticus* a high polymer mucopolysaccharide lysozyme substrate was prepared which proved to be only weakly antigenic but was precipitated by antibacterial serum. Substrates from *M. lysodeikticus* and *Sarcina lutea* are closely related immunologically. Lysozyme also affects agglutinated organisms and substrate combined with antibody.—E. KLIENEBERGER-NOBEL.

MAYR-HARTING, A. (1947.) The growth of bacterial colonies and their viable population.—*J. Hyg., Camb.* 45. 19–27. [Author's summary copied *verbatim*.] 294

A method to measure roughly the crowding of colonies on the surface of an agar culture is described. The maximal viable count of a colony

of *B. coli* on nutrient agar is shown to be quantitatively dependent on the number and distance of other colonies on the plate. It is higher the less colonies there are in the culture and the greater the distance between them. The time when the maximal viable count is reached depends on the same factors as the number. The more isolated a colony stands the longer its population will go on increasing, and its maximal viable population will be reached days later than that of colonies under crowded conditions. The sum of the theoretically calculated maximal viable counts of all colonies is equal per area of culture surface. The possible relationship of these results to those obtained in liquid media, and the factors influencing growth (such as availability of food supplies) are discussed.

CURRAN, H. R., & EVANS, F. R. (1947.) The viability of heat-activatable spores in nutrient and nonnutrient substrates as influenced by prestorage or poststorage heating and other factors.—*J. Bact.* 53. 103–113. [Authors' summary copied *verbatim*.] 295

The spores of aerobic, mesophilic and thermophilic, heat-activatable cultures undergo profound and rapid alteration in viability when activated and stored under conditions unfavorable for complete germination.

When activated and stored in nutritionally incomplete substrates (distilled water or glucose solution), spores die rapidly or undergo deactivation with retention of viability; when activation is conducted in a nutritionally complete medium (milk) with storage at subminimum growth temperatures, the spores die more slowly and there is little evidence of deactivation. Unheated, activatable or nonactivatable spores undergo little or no change in viability over long periods; in glucose solution the rate of deterioration is measurably increased.

The reaction associated with the rapid death of heat-activated spores has a temperature optimum ranging with the organisms studied from 30 to 47°C, depending upon the organism and the pH of the substrate.

A theory for the mechanism of the observed reactions is advanced.

See also absts. 397 (action of metal chlorides on bacteria); 398–402 (penicillin therapy); 403 (streptomycin); 433–440 (annual reports); 441 (studies on the risk of infection with bovine TB. to the rural population); 447 (elementary bacteriology and text-book).

DISEASES CAUSED BY PROTOZOAN PARASITES

FIENNES, R. N. (1946.) Phenanthridinium compounds in trypanosomal infections. [Correspondence.]—*Vet. Rec.* 58. 606. 296

It is suggested that RANDALL & BEVERIDGE [*V. B.* 17. 492] in recommending a dose of 1 mg. per kg. of phenanthridinium 1558 have under-

estimated the danger of using subcurative doses in trypanosomal infections, such doses tending "to drive the parasites underground" and thus making cure more difficult.

In one case of photosensitization after treatment with 2 mg. per kg., to which reference was

made, F. had been unable to satisfy himself that the intended dose had not been considerably exceeded. He records that he is treating a Guernsey bull for *T. congolense* infection with 1.5 mg. per kg. of phenanthridinium 897 followed by subcurative doses of stibophen, but doubts if cure will result.—U. F. RICHARDSON.

ROUBAUD, E., & PROVOST, A. (1940.) Influence des réactions d'ordre psychique chez certains animaux trypanosomés. [Effect of psychological disturbances on trypanosome infection in animals.]—*Bull. Soc. Path. exot.* **33**. 315-320. 297

It has been claimed that psychological condition influences resistance to trypanosome infection, and that in man the depressing conditions in treatment centres, with the removal of the patient from his normal environment and associates, have an adverse effect on his response to treatment.

Testing the effect of isolation and change of environment on horses, sheep and goats recovered from infection with strains of *T. vivax*, or so far recovered that trypanosomes no longer occurred in the blood, it was found that a febrile reaction resulted with sometimes, the reappearance of trypanosomes. On return to normal associations these reactions subsided. Details are given of the reactions of four animals, and it is claimed that similar results have been frequently observed.

—U. F. RICHARDSON.

FIENNES, R. N. T.-W. (1947.) Immunity and premunity in cattle trypanosomiasis: I. & II. —*Vet. Rec.* **59**. 291-292 & 292. 298

I. When test trypanosomes were incubated for an hour with serum from five cattle, which had apparently recovered from *T. congolense*, no protective antibody could be demonstrated on the inoculation of mice, but serum from a premunized animal had marked protective properties.

In an attempt to absorb trypanosome antibody, protective sera were incubated with homologous trypanosomes in large numbers. These trypanosomes when injected into mice with serum failed to infect them, but when separated and washed with Ringer-glucose they proved infective. It is claimed that this indicates that the protection is due to sensitization with a substance of the nature of an opsonin, and that "immunity" is vested in the tissues, probably the reticulo-endothelial system, whereas "premunition" may be due, at any rate in part, to certain humoral factors.

II. Out of 16 cattle infected with *T. congolense* it is claimed that in 57 weeks 14 had recovered, since their pooled blood injected into two calves failed to infect them and their re-inoculation

with infected mouse blood did not lead to a reappearance of trypanosomes. The other two animals remained infected. Whilst the recovered animals were in good condition, appearances indicated that the affected ones were not healthy, and this is confirmed by a comparison of the weight curves. It is claimed that this indicates that the premunized animal does not attain full health.

[The evidence that the 14 animals were free from trypanosomes is not entirely conclusive, and if the remaining two animals still showed clinical evidence of disease they might be classed as chronically infected, rather than "premunized".]

—U. F. RICHARDSON.

KIRBY, H. (1947.) Flagellate and host relationships of trichomonad flagellates.—*J. Parasit.* **33**. 214-228. 299

The classification of the non-pigmented Flagellata is unsatisfactory. At present the various groups—orders, suborders and families—are separated on such characters as number of flagella, the existence of amoeboid forms with or without the loss of flagella, the relationship of a trailing flagellum to the surface of the body and the number of mastigont units that may be present in an individual. Early investigators paid particular attention to external features as evidence on which taxonomy was based [the fact of the occurrence of amoeboid and flagellate stages in groups other than the Sarcodina and Mastigophora raises doubts in the mind as to the intrinsic worth of our conceptions of even the broader aspects of the classification of the protozoa]. Present knowledge indicates that studies of the detailed structure of the mastigont system in the Flagellates and of the nucleus, cytological features of division and certain features of the life-history might lead us to a more natural classification. For example, there is reason for believing that the existence of a kinetoplast, which divides, is really a fundamental character in demonstrating the interrelationship in a group of flagellates that have one to four flagella; but the current systems distribute these flagellates between two different orders and a multiplicity of families according to the number and arrangement of flagella. It is not yet possible to relate detailed information concerning the cytology and life-history of all non-pigmented Flagellata with a view to evolving a more natural system of classification but there are certain groups within which lines of true relationship can be recognized and K. considers that these forms should be brought together. One of these may be called the trichomonad flagellates or order Trichomonadina. This order might be defined by the presence of certain kinds of organelles, arranged in a mastigont system. These organelles

may be modified and certain new ones added and one or more may at times be absent, *e.g.*, the kinetoplast in certain trypanosomes. The nucleus is usually of a common type and the division process follows a common pattern. Euglenoid flagellates and dinoflagellates, etc., have distinctive features in nuclear structure and division. The features that characterize the Trichomonadina are (1) the presence of the Janicki-type of parabasal body, which originates *de novo*, (2) the presence of an axostyle, (3) a nuclear structure in which chromatic material fills much of the interior with peripherally arranged nucleoli, (4) the existence in mitotic division of an extra nuclear parademesome, (5) nuclear division typically with intact nuclear membrane within which chromosomes organize in relation to the nuclear membrane in the region of the poles of the extra nuclear spindle. Individually, these characters, with the probable exception of the Janicki-type of parabasal body, are not found exclusively in the trichomonads but the group collectively is clearly defined by them. K. discusses at some length the different forms of trichomonad flagellates and the more outstanding evolutionary trends in the Flagellata which they indicate.—C. HORTON SMITH.

MORGAN, B. B. (1947.) **Vaccination studies on bovine trichomoniasis.**—*Amer. J. vet. Res.* 8. 54-56. 300

Three groups of ten virgin heifers were immunized by the repeated intramuscular, or intravenous injection of live *Trichomonas foetus*. Thirty unvaccinated virgin heifers acted as controls. At the first oestral period after immunization the animals were artificially inseminated with fresh normal semen, and 24 hours later were inoculated into each uterine horn with 10 ml. of 0.7% saline containing 50 million trichomonads per ml.

In the first group, eight animals had received a prolonged course of 16 intramuscular injections, and two animals 16 intravenous injections. Five heifers conceived on the first insemination; two on the second, two on the third, and one on the fourth. Organisms were detected in only one animal, while in all ten control animals trichomonads were recovered and were associated with vaginitis, endometritis and pyometra.

In the second group the ten animals were each vaccinated on six occasions by the intramuscular injection of live trichomonads. Seven heifers became infected by the first insemination and infection while three conceived and failed to become infected. In the control group six became infected, only one of which became pregnant and carried a full-term calf, of the four uninfected heifers three became pregnant.

In the third group the ten heifers received

two intramuscular injections of live trichomonads. Eight became infected, and the two uninfected heifers failed to conceive. In the control group four became infected, two of these became pregnant. Five of the six uninfected became pregnant.

Immobilization tests carried out at regular intervals on serum from each animal showed the development of the following titres after vaccination:—Group I 1:64-1:256, Group II 1:4-1:16, Group III 1:4-1:8.

The author concludes that although a temporary immunity results from a long series of infections, vaccination for the protection of breeding females could not be recommended as a practical procedure.—A. E. PIERCE.

STABLER, R. M. (1947.) ***Trichomonas gallinae*, pathogenic trichomonad of birds.**—*J. Parasit.* 33. 207-213. 301

Trichomonas gallinae, a pathogen of birds, is found in the upper digestive tract and associated tissues as far as and including the glandular stomach. It has been known secondarily to invade the body cavity and to affect almost every organ and tissue. In chronic infections in the pigeon the organism may be recovered from the sinuses, mouth, pharynx, oesophagus and crop. Small, yellowish masses in the mouth or upper oesophageal region may be seen in otherwise healthy birds. In fatal infections there may be few lesions which are confined to the mouth and pharynx. When virulent strains of *T. gallinae* are used, lesions usually appear in one week and take the form of yellowish areas on the oral mucosa, these grow rapidly in size to form coalescent areas of caseation that may entirely block the oesophagus. Loss of weight occurs and the bird becomes listless and weak. The crop becomes distended with fluid and death occurs in about 10 days. The ultimate source of infection in the pigeon is the positive adult which is usually a healthy carrier. Poor hygiene, ventilation, etc. have been accused of causing outbreaks but do not afford an explanation for all cases. Some outbreaks are caused by what are assumed to be more virulent species. There is much evidence in support of the view that the drinking water may be a means of transmission. No treatment appears to be of value in clinical cases and the best means of combating the disease is to liquidate the stock carrying the virulent strains or to hatch their eggs under healthy birds. *T. gallinae* is easy to grow in artificial media.—C. HORTON SMITH.

TEMPERTON, H., DUDLEY, F. J., BYTHELL, D. W. P., & PARKER, W. H. (1947.) **The control of blackhead (infectious enterohepatitis) in turkeys. I. A review of the literature and an account of**

preliminary investigations.—Harper Adams
Util. Poult. **32.** 42–51. **302**

This review contains an account of the various methods adopted to prevent and cure blackhead. The experimental work consisted in the intramuscular and oral administration of neosphenamine B.P. and oral administration of phenothiazine as prophylactic measures. Sulphathiazole was used as a therapeutic agent. The incidence of blackhead in the 348 experimental turkeys was too low for adequate assessment of the value of the treatments, except that the prophylactic feeding of phenothiazine at the rate of 2,000 gm. per ton of food was useless as there was a 40% death rate in one group from the disease. None of the treatments adversely affected growth. After administration of arsenicals the blood values showed great variation.—K. G. T.

LEVINE, P. P., & BARBER, C. W. (1947.) **The comparative efficiency of some coccidiostatic agents against experimental infection with *Eimeria tenella*.**—*Cornell Vet.* **37.** 155–159. **303**

The results of seven experiments are recorded in which sulphur, sulphaguanidine, sulphamerazine, and sulphamezathine incorporated in the food in the proportions of 5.0, 1.0, 0.5 and 0.5% respectively were fed to infected chicks. It was found that flowers of sulphur was as effective as the sulphonamides in controlling caecal coccidiosis when treatment was begun 48–24 hours before infection. Sulphur was ineffective when fed on the day of infection or later. At the concentrations used there was little difference in efficacy between sulphaguanidine, sulphamerazine and sulphamezathine even if treatment is delayed for 48 hours after infection. Only partial success was attained when medication was begun 72 hours after infection. Treatment started 96 hours after infection proved valueless. All the sulphonamides were more or less toxic when treatment was continued for eight days or more, when chickens showed swelling, haemorrhagic infarction and necrosis of the spleen. [No figures relating to the blood levels attained are given and it is therefore impossible to explain some of the differences which exist between the present results and those obtained by other workers.]—C. H. S.

DOWNES, W. G. (1947.) **Infections of chicks with single parasites of *Plasmodium gallinaceum*** Brumpt.—*Amer. J. Hyg.* **46.** 41–44. [Author's summary and conclusions copied *verbatim*.] **304**

1. Three chicks in 46 trials were infected by intracardiac inoculation of single erythrocytes containing single parasites of *P. gallinaceum*. One chick was infected with a single erythrocyte containing two parasites.

2. The infections induced, aside from a

prolonged incubation period, did not differ materially from infections induced with larger inocula. The periodicity of the infection was more clear cut, however.

3. Exoerythrocytic forms of the parasite were noted in first subpassage birds. Gametocytes were noted in birds infected with one parasite, and it was possible to infect mosquitoes from a second subpassage chick.

4. A single trophozoite of *P. gallinaceum* has potentialities for initiation of schizogonous, gametogonous and exoerythrocytic cycles.

ROSTORFER, H. H., & RIGDON, R. H. (1946.) **A physiologic study of hematopoiesis in the duck with malaria.**—*Amer. J. clin. Path.* **16.** 518–526. **305**

Experiments were undertaken to extend the knowledge concerning anaemia and haematopoiesis in ducks infected with *Plasmodium lophurae*. Observations were made on the total red cell counts, the cell volume index, the colour index, the parasitaemia, the number of young red cells, the percentage of functional haemoglobin, and the relative amount of cellular haemoglobin, *i.e.*, the close packing of the haemoglobin within the cell.

White Pekin ducks 15–20 days old were infected with an inoculum obtained from highly parasitized birds. The course of the infection was followed in five separate groups of birds until death or recovery occurred. It became evident that a severe malarial infection in young ducks was accompanied by a marked destruction of the adult red cells and by a tremendous production of young red cells. The decrease in functional haemoglobin in relation to the amount of haemoglobin determined colorimetrically occurred during the first four days after inoculation and was thought to be caused by the presence of malarial pigment. The decrease in functional haemoglobin was connected with the number of young cells present during the recovery stage. The cell-volume index was increased and the relative cellular haemoglobin was decreased during the period when the young cells comprised 60–80% of the total number of cells present. It seems that the young red cells of the duck contain a substance which does not carry oxygen, but is determined as acid haematin by the colorimetric method of Schultze and Elvehjem.—C. HORTON SMITH.

OBERLÉ, G. (1945.) **Recherches sur les formes extraérythrocytaires du paludisme humain à *P. vivax*.** [Exo-erythrocytic forms in malaria in man due to *Plasmodium vivax*.]—*Bull. Soc. Path. exot.* **38.** 27–37. **306**

In cases where *Plasmodium vivax* has been injected into the marrow, O. has observed entities

which appeared to represent extraerythrocytic stages of the life cycle of the *Plasmodium* in man. In every instance groups of two, three or more unpigmented merozoites occurred freely in the marrow. The staining affinities differed from those of intraglobular schizonts in that the cytoplasm coloured an intense blue and the chromatin a ruby red. In only one case did O. see an unpigmented schizont in the interior of a reticulo endothelial cell.—C. HORTON SMITH.

DELPY, L. P. (1946.) Description de formes schizogoniques de *Babesia bigemina*. Comparaison avec des formes identiques, décrites par E. Dschunkowsky, 1937, sous le nom *Luhisia bovis* n.sp. [Identity of schizonts of *Babesia bigemina* with *Luhisia bovis*.]—*Arch. Inst. d'Hessarek*. 2. No. 2. 43-53. [In French.] 307

Following experimental inoculations of cattle in Iran, severe attacks of piroplasmosis frequently develop in 3-4 days. This is thought to be manifestation of a latent infection provoked by the inoculation. Studies carried out on a total of five cases showed numerous intracellular bodies which had not before been described in cases of piroplasmosis due to *Babesia bigemina*. These are sketched, and the author concludes that they represent the process of schizogony in *B. bigemina*. He also considers that a new species, *Luhisia bovis*, described by Dschunkowsky in 1937 was in actual fact merely *B. bigemina* undergoing schizogony.

—G. B. S. HEATH.

PURCHASE, H. S. (1947.) Cerebral babesiosis in dogs.—*Vet. Rec.* 59. 269-270. 308

Three cases of cerebral babesiosis were encountered in examining the brains of dogs for rabies. The parasites packed the capillaries and small arterioles where they were nearly all extra-cellular, the distribution through the brain matrix being uneven. In shape and size the parasites resembled *B. canis*, but the nuclear mass of the extra-cellular forms was central, being reminiscent of the nuclear position in the toxoplasma.

—U. F. RICHARDSON.

NAGATY, H. F. (1947.) Some new and rare records of piroplasmosis with a list of the species

of babesia and theileria so far recorded from Egypt. [Camels, sheep and goats.]—*Vet. Rec.* 59. 145-147. 309

The literature on piroplasma infections of camels is discussed, and an organism occurring in blood smears from camels at Abbassiah is described. Theileria-like organisms, 0.5-1 μ in length occurred in the r.b.c., which also contained pear-shaped bodies about 2 μ in length. A schizont was also found in a lymphocyte. Bodies are also described in the erythrocytes, consisting of dividing forms encapsulated, and staining pinkish-violet, the blood corpuscles staining bluish-red. The capsules ranged from 3-8 μ in diameter, and contained 7-14 dividing forms. [Illustrations of this organism are given under the name *Th. camelensis*, but if dividing forms occur in the erythrocytes it cannot be accepted as a *Theileria*.]

Two small babesia of sheep are described under the names *B. ovis* and *B. sergenti*, the latter being considerably the smaller.

B. ovis is described as peripherally placed in the corpuscle, but the illustrations suggest that this location is more marked for the organism described under the name *B. sergenti*.

Theileria hirci is also recorded in smears from a goat.—U. F. RICHARDSON.

CURASSON, G. (1940.) Spirochètes du cheval et de l'âne. [Spirochaetes in the horse and the donkey.]—*Rec. Méd. vét. exot.* 13. 49-55. 310

The spirochaetes of the horse and ass are discussed in two groups, those of the blood, and those in various tissues. Spirochaetes have been detected in the blood of horses in Africa, Palestine and South America, the African form being perhaps identical with *Sp. theileri* of cattle. In several cases their occurrence in horses has been associated with confirmed or suspected trypanosomiasis which may stimulate to activity a chronic spirochaetal infection. The organism is possibly identical with that recorded from pigs and game.

Spirochaetes occurring in ulcerous lesions of the mucous membranes of the mouth and skin, and the evidence as to their role as primary and secondary invaders, are also discussed. No definite conclusions are reached.—U. F. RICHARDSON.

See also absts. 330 (parasites of mice); 334 (leishmaniasis); 404 (piroplasmosis); 405 (trichomonas and haemoproteus in pigeons); 433-440 (annual reports).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

MENZANI, C. (1944.) Un nuovo vaccino anti-aftoso. [A new foot and mouth disease vaccine.]—*Clin. vet., Milano*. 67. 19-22. 311

This is a brief report of a F. & M. disease vaccine prepared in the same manner as an aluminium hydroxide adsorbed virus vaccine

except that a bentonite gel is used instead of an aluminium hydroxide gel. The method of preparation is not described in detail, it is simply stated to consist of a filtrate of a vesicle epithelium suspension shaken with a bentonite gel followed by the addition of formalin and 48 hours incubation.

tion at 28°C. The dose for cattle is a subcutaneous injection of 20 ml., each dose based on 0.35 gm. epithelium. The author claims that a high degree of immunity is produced in cattle.

—W. M. HENDERSON.

VALCÁRCEL, F. F. (1944.) La actual epizootia de glosopeda en España. [Foot and mouth disease in Spain.].—*Cienc. vet. (Rev.)*. 5. 107-117. 312

The first outbreaks in a double waved outbreak of F. & M. disease in Spain occurred in November and December, 1942, in the Pyrenees area, by February the disease had spread to the neighbourhood of Madrid and by July, 1943, the epizootic had extended to 20 provinces affecting livestock to a value of 1,350 millions of pesetas. Subsequently the disease became widespread in six more provinces, some of which bordered on Portugal.

Near Madrid, on February 15th, 1943, infective material was collected from a bovine animal and a virus strain isolated by g. pig passage, strain "Canillas I". On March 17th, 1943, material was collected from the same animal now suffering from a second attack of the disease and the virus strain isolated was called "Canillas II". The immunological type of these strains was determined at Madrid using g. pigs and at the Island of Riems, Germany, by the complement fixation test, in each test "Canillas I" was classified Vallée type O and "Canillas II" Vallée type A. The strains were also sent to Switzerland where each was inoculated into two groups of four cattle vaccinated respectively against type O and types O and A. No cattle in these groups reacted to strain I but both groups reacted to strain II whereas on the result of the other typing tests the OA group might have been expected to resist this strain. As this discrepancy might be explained by a low degree of immunity to type A in the OA group of cattle, the author, relying on the results of the g. pig tests and the complement fixation tests, regards the strains as belonging to Vallée type O and Vallée type A respectively.—W. M. H.

I. OLAFSON, P., & RICKARD, C. G. (1947.) Further observations on the virus diarrhea (new transmissible disease) of cattle.—*Cornell Vet.* 37. 104-106. 313

II. WALKER, R. V. L., & OLAFSON, P. (1947.) Failure of virus diarrhea of cattle to immunize against rinderpest.—*Ibid.* 37. 107-111. 314

I. Some further details are given of the outbreak of disease in cattle described by WALKER and OLAFSON [*V.B.* 17. 186]. Experimental inoculations were made, using 28 heifers between nine and 20 months of age. Of these 25 developed clinical symptoms, two died and three, two of

which were very ill and might have died, were destroyed. Old cows were more resistant to experimental infection. Two further sporadic fatal cases on separate farms have been observed. Two attempts to grow the virus on chick embryo failed.

The resemblance of the disease to rinderpest is recognized and in order to determine whether they were related the following experiment was made. Lyophilized rinderpest antiserum was obtained from the Bureau of Animal Industry. One ml. of this, when reconstituted, was stated to be capable of neutralizing 10,000 infective doses of rinderpest virus [no information is given as to the age of this serum nor of its method of preparation]. A 20% suspension of a spleen containing the new virus was prepared. 10 ml. of this suspension, calculated to contain from 200 to 2,000 infective doses were mixed with 2 ml. of the reconstituted rinderpest serum and held at 34°F. for two hours. The mixture was divided evenly and inoculated into two calves. Two control calves received the same amount of virus with normal cow serum and one control the virus mixed with saline solution. The three controls became infected while the two calves which had received the rinderpest antiserum remained well and were later proved susceptible to the new virus [no details are given of this later test, the wording is "The latter two proved susceptible on subsequent exposure"].

A similar test was made using rinderpest antiserum from another ampoule. Difficulty was experienced in reconstituting the serum from this ampoule which formed a gelatinous mass. This sample failed to protect the two calves used in the experiment. [The result of the first test indicates that rinderpest antiserum protected calves against the new virus but the authors state that further neutralization studies were made at Grosse Isle which suggest that the calf from which the anti-rinderpest serum was secured had previously been infected with virus diarrhoea. No further information regarding these Grosse Isle neutralization tests is given.]

II. As the Grosse Isle rinderpest experimental station in Canada was about to be closed down, arrangements were made for further studies on the immunological relationship of the new disease to rinderpest by sending to Grosse Isle six heifers which had recovered from an experimental infection with the new virus. [The ages of the heifers are not given but it is stated that "they were not calves since some of them were well along into their second year of life".]

The experimental infection of these six heifers with the new virus took place on June 15th, 27th and 28th. Temperature reactions are shown

in charts and three of the heifers developed ulceration of the mouth on the 13th day after infection. They were all injected with rinderpest virus at Grosse Isle on August 17th. All showed rise of temperature starting on the 2nd, 3rd or 4th day after infection. They were all destroyed, some on the 10th and some on the 11th day after infection. Diarrhoea developed on the 4th-6th day after injection. None of the calves developed ulceration of the mouth. On P.M. examination oedema of the gastric mucosa and haemorrhages of the gall bladder were found. One calf had "small ulcers in the gastric mucosa", one had some "reddening of the ileo-cecal valve" and one had "necrosis on the omasal side of the omasal-abomasal orifice".

Pooled serum from two heifers which had recovered from experimental infection with the new virus was mixed with a suspension of a rinderpest infected spleen and kept for two hours in an ice-box at 32-34°F. The mixture was injected subcutaneously into six calves, each calf receiving 1 ml. of spleen suspension and 1 ml. of the pooled serum. All of the calves developed rinderpest and were destroyed on the 5th or 6th day after injection. The temperature reactions of these calves are given but there is no description of the intensity of the disease nor of the lesions.

The authors conclude that serum from animals which had recovered from the new virus disease did not neutralize rinderpest virus and that heifers which had passed through an attack of the new virus disease had not developed any protection against the rinderpest virus used. [The evidence on which these conclusions are based is open to criticism and one would have wished for further details. That none of the six recovered heifers which were inoculated with rinderpest virus had died by the 10th day, that none had developed ulceration of the mouth and that very slight lesions only were present at P.M. examination after destruction on the 10th and 11th day is suggestive that they had developed some considerable resistance. The Grosse Isle workers state that calves "allowed to progress have died after from 6-10 days of illness", *vide Amer. J. vet. Res.* 7. 186. The temperature charts are of such a nature as to suggest that these six calves would have recovered had they not been destroyed, no information is given as to the clinical condition of the calves at the time of destruction.

The finding that rinderpest antiserum neutralized the new virus does suggest an immunological relationship between the two viruses. One would like to have had details of the experiments which were considered to suggest that "the calf from which the anti-rinderpest serum was secured had previously been infected with virus diarrhoea".

This explanation appears to suggest that two viruses were present on Grosse Isle, namely rinderpest virus and the "new" virus.]—M. C.

GOPALAKRISHNAN, V. R. (1946.) **The occurrence of contagious caprine pleuro-pneumonia in Assam.**—*Indian vet. J.* 23. 190-202. 315

G. records pleuro-pneumonia among goats in Assam, which was perhaps introduced through the large influx of goats brought in for army consumption. The disease was highly fatal. It was transmissible to sheep, but not to calves; inoculation of lung material resulted in characteristic swelling. The pleuro-pneumonia-like organism was isolated and was immunologically related to a Bombay strain of *Borrelomyces peripneumoniae capri* [see LONGLEY—*V. B.* 12. 43]. Treatment of early cases with N.A.B. yielded encouraging results. Ear-tip vaccination, using natural lung material gave satisfactory results.—P. C. GANGULEE.

DONATIEN, A., PLANTUREUX, E., RAMPON, L., & GAYOT, G. (1946.) Immunisation contre la peste porcine. [Swine fever immunization.]—*Bull. Acad. vét. Fr.* 19. 74-85. 316

The authors report on the results of serum virus immunization commenced in 1940 in Algeria. The potency of both serum and virus were known throughout the period. The authors state that by this means they can control the disease and they advocate the application of the method to France. A note is appended on the intradermal test in the diagnosis of swine fever [see also *V. B.* 11. 24].—J. A. J. VENN.

DIMOCK, W. W. (1945.) **Hog cholera. Suggestions on prevention and difficulties of diagnosis.**—*Circ. Ky agric. Exp. Sta.* No. 58. pp. 10. 317

Although the cause of swine fever has been known in the U.S.A. for 40 years and serum and virus have been available for immunization against it during most of that time, it is generally recognized that the control of the disease on a national basis has been unsuccessful. This is considered to be due to general failure of the authorities to enforce the regulations and of pig owners to suspect the existence of the disease in its early stages. Many owners consider that the cost of vaccination is too high, and instead of employing it, depend on selling out at an early stage to curtail their losses, thus spreading the disease. A plea is made for intensification of efforts to eradicate the disease through widespread vaccination and the control of movements of all animals.—D. D. O.

SIPPEL, W. L. (1945.) **The Boynton gall bladder smear for diagnosis of hog cholera.**—*Cornell Vet.* 35. 147-151. 318

A discussion of the technique, interpretation and value of this test as an aid in the diagnosis of swine fever. [See also *V. B.* 13. 17.].—J. A. J. V.

TOWNSON, R. S. (1947.) **Infectious catarrhal fever of dogs.**—*Vet. Rec.* 59. 203. 319

An outbreak among dogs is described of a disease called "catarrhal fever". The disease is stated to be distinguished from dog distemper. The evidence put forward by T. to support this is as follows:—Of 120 cases selected 19 had previously been vaccinated against dog distemper. Five other cases were reported as having previously shown clinical symptoms of distemper. Distemper serum prophylaxis was only partially successful in protecting in-contacts. Inclusion bodies were not found in those animals which were examined at P.M.

The clinical picture described is typical of dog distemper. *Brucella bronchiseptica* and *Streptococci* were found characteristically and sulphapyridine caused a drop in temperature within 24 hours.

In many cases nervous symptoms developed in 14–28 days after apparent recovery.—S. B. K.

BEAUDETTE, F. R., & BLACK, J. J. (1945.) **Newcastle disease in New Jersey.**—*Proc. 49th ann. Meet. U.S. Live Stk. sanit. Ass., 1945.* pp. 49–58. 320

Outbreaks of a respiratory disease, in which there was a precipitous fall in egg production occurred in laying flocks in New Jersey during the winter of 1944–45. During the following chick season a bronchitis-like disease associated with nervous symptoms appeared.

Virus was isolated from 15 flocks. Spleen tissue from 41 chicks from infected flocks yielded 19 isolations of virus; brain tissue from 22 chicks yielded seven positive isolations. Two liver samples and one blood sample were negative.

Three strains of virus were identified by neutralization with Newcastle disease antiserum. Virus neutralizing antibody was demonstrated in the serum of some recovered fowls and from some fowls in flocks which had failed to yield virus on egg inoculation.—F. D. ASPLIN.

FENSTERMACHER, R., POMEROY, B. S., & MALMQUIST, W. A. (1946.) **Newcastle disease in Minnesota.**—*Proc. 50th ann. Meet. U.S. Live Stk. sanit. Ass., 1946.* pp. 151–157. 321

Newcastle disease was first recognized in Minnesota in May, 1946, in turkey poults originating from Michigan. At the time of writing 36 flocks were known to be infected. The symptoms in fowls were characterized by slight coryza and marked fall in egg production; in chicks there was a combination of respiratory and nervous symptoms. Mortality was generally less than 10%. No nervous symptoms were seen in poults or mature turkeys although respiratory symptoms were frequent.

Chinese pheasants, Chukar partridges, quail and racing pigeons, artificially infected with Newcastle disease virus developed positive haemagglutination inhibition power but did not show symptoms. Hungarian partridges and one Ring dove became clinically affected.—F. D. ASPLIN.

HOFSTAD, M. S. (1947.) **Newcastle disease.**—*Iowa Vet.* 18. 12–13, 32, 34. 322

This is a brief review of Newcastle disease with special reference to its occurrence in the U.S.A. It is stated that the first appearance of the disease in U.S.A. was in California in 1940. Its nature was not recognized because of its mild character and it was named pneumo-encephalitis. [No suggestion is made as to how the disease was introduced into California.]—M. C.

GORDON, R. F., & ASPLIN, F. D. (1947.) **Newcastle disease in England and Wales.**—*Vet. Rec.* 59. 197–198. 323

This is a preliminary report covering the first seven weeks of the outbreak of Newcastle disease which started in England and Wales in February, 1947, after a period of 13 years freedom from the disease. The distribution of outbreaks in 23 counties is described. The morbidity has approached 100% and mortality would probably have been equally high had not a slaughter policy been enforced.

Generally the symptoms have been a loss of appetite, profuse frothy yellow diarrhoea and marked respiratory distress. Weakness and partial paralysis of the legs and in a few cases twitching of the head have also been observed. Mucous discharge from the mouth and distension of the crop with fluid have not been noticeable in this outbreak. The P.M. lesions have been variable, the most constant lesions have been haemorrhages on the mucous membrane of the proventriculus. Diphtheritic and haemorrhagic ulcers of the duodenum have been present in many cases. Diagnosis in the early cases was by isolation of the virus on chick embryos, and its identification by the Hirst test. Transmission experiments have also been used.

Most outbreaks have been in small flocks where swill feeding has been in use or where the birds had access to swill used for pig feeding.

The introduction of the virus appears to be a consequence of importing dead table poultry.

—M. C.

LURIA, S. E., & LATARJET, R. (1947.) **Ultraviolet irradiation of bacteriophage during intracellular growth.**—*J. Bact.* 53. 149–163. [Authors' summary copied verbatim.] 324

Ultraviolet irradiation of *Escherichia coli*, strain B, infected with bacteriophage T2 showed that, immediately after infection, suppression of

the ability to liberate phage results from inactivation of the intracellular phage.

The sensitivity of the infected bacteria was studied during the 21-minute interval between infection and lysis. In the first 12 minutes, the infected bacteria show a rapid increase in resistance, apparently due to increased resistance of the intracellular phage particles. This is possibly caused by accumulation of ultraviolet-absorbing material around the phage. At later times the resistance of infected bacteria to high doses of radiation decreases. This is interpreted to indicate that, as phage multiplication proceeds, the apparent sensitivity of the intracellular phage particles returns to higher values.

A quantitative study of phage multiplication by an analysis of the survival curves of infected bacteria is made possible by these changes in sensitivity of the individual phage particles during growth, and by the presence of wide fluctuations, in the course of phage growth, among individual infected cells.

Phage lysates appear to contain, besides the active phage itself, some other component which influences the course of the intracellular phage growth as manifested in the changes in ultraviolet sensitivity described above.

In case of infection of a bacterial cell with more than one particle of phage T2, analysis of the survival curves shows that several particles can grow in the same host cell.

VEENENDAAL, H. (1946.) Is de keratoconjunctivitis infectiosa bovis (houw) een rickettsiose? [Is kerato-conjunctivitis of cattle caused by a rickettsia?—*Tijdschr. Diergeneesk.* 71. 779-783. [English summary.] 325

V. reviews briefly the Dutch literature on

See also absts. 433-440 (annual reports); 441 (Newcastle disease).

infectious kerato-conjunctivitis of cattle in Holland and then describes the main features of rickettsial conjunctivitis which has been observed chiefly in Africa.

The Dutch disease is transmissible by direct or indirect contact and resembles the rickettsial disease.

V. has carried out no work to establish their co-identity and merely suggests this possibility.

—J. E.

COMBIESCU, D., & STURDZA, S. A. (1942.) Untersuchungen über europäischen Flecktyphus bei Schweinen. [Research on European typhus fever in pigs.]—*Z. Hyg. InfektKr.* 123. 849-354. 326

A European typhus strain cultivated in g. pigs was used. About the sixth day a rise of temperature lasting 2-3 days followed the simultaneous inoculation of infective g. pig brain emulsion into young pigs (weighing 5.5-9.3 kg.) by the intracutaneous, subcutaneous and intraperitoneal routes. The heart blood of the pigs, taken on the tenth day, caused a characteristic temperature response in g. pigs after intraperitoneal inoculation indicating the presence of the "virus" in the blood. Heart blood taken from the pigs on the 10th and 14th days gave a positive Weil-Felix reaction (using *P. proteus* strains OX 19, OX 2, and OX K). There were no exanthematous manifestations. When again inoculated with infective material, the pigs showed no further temperature response.

Injection of other pigs with infective g. pig brain material by a single route was not followed by a rise of temperature, and in one case only (following subcutaneous inoculation) by a positive Weil-Felix reaction.—E. COTCHIN.

IMMUNITY

BARNES, J. M. (1947.) Effect of mass of inoculum on virulence of bacteria injected intraperitoneally in mice.—*Lancet.* 253. 127-128. 327

It was found that after intraperitoneal injections into mice of an identical number of anthrax spores suspended in different volumes of distilled water the death rate rose in proportion as the volume of the inoculum was increased. With 0.85% sodium chloride solution as the diluent an increase in the mass of the inoculum had no significant effect on the mortality.

It is suggested that the virulence of a particular organism used for the infection of mice should be expressed in terms of the mass of the inoculum as well as in terms of the number of viable organisms.—S. BRIAN KENDALL.

PIGOURY, L. (1943.) Titration de la malleine par flocculation. [Titration of mallein by flocculation.]—*C. R. Soc. Biol. Paris.* 137. 269-270. 328

An anti-mallein serum is prepared in the horse by injection of dead organisms in an oily excipient [see also *V. B.* 10. 486]. The antigen in the flocculation test is the mallein under test, diluted, on an average, 1:50. The test is carried out on the usual lines, adding increasing quantities of serum to a fixed quantity of antigen. The tubes are incubated at 45°C., and the time of initial flocculation observed. The mallein under test can be compared with an arbitrarily chosen standard mallein which is known to give good reactions in glandered horses, as the amount of

serum determining initial flocculation is proportional to the amount of antigen.—E. CORCHIN.

BROCQ-ROUSSEU, D. (1944.) La réaction de Vernes. (Flocculation par la résorcine.) [Vernes' reaction—resorcin flocculation.]—*Rev. Path. Comp.* **44**. 185–208. **329**

If, in a series of tubes, serum is distributed in fixed quantity, and a flocculating agent is added to the tubes in ascending concentrations, the degree of flocculation will be found to vary according to the concentration of the added agent. This, essentially, is the Vernes reaction. There is also a difference between the degree of flocculation in the serum of healthy animals and that in the serum

of patients with certain diseases, a fact which has been put to diagnostic use.

The author reviews the literature on the subject (there are 11 pages of references) and discusses the use of resorcin as a flocculating agent. The method is detailed and its merits discussed as a diagnostic test in TB., puerperal infections, lymphogranulomatosis, cancer, and as a guide to prognosis. The reaction is compared with the complement fixation test. The main use of the Vernes reaction would seem to be in the diagnosis of early TB. and in assessing the prognosis of the disease. There are brief notes on the reaction in some species of domestic mammals.—L. M. M.

See also absts. 260–267 (immunization against TB.); 269–272 (tuberculin sensitivity); 276 (fowl plague); 298 (cattle trypanosomiasis); 300 (bovine trichomoniasis); 311–312 (foot and mouth disease); 315 (caprine pleuro-pneumonia); 316 (swine fever); 314 (rinderpest); 355–357 (icterus neonatorum in mule foals).

PARASITES IN RELATION TO DISEASE [GENERAL]

KOFFMAN, M. (1946.) Om parasiter hos möss. [Parasites of mice.]—*Skand VetTidskr.* **36**. 424–442. [English summary.] **330**

This is a fairly detailed illustrated account of the parasites of white mice. References to literature on some additional parasites of mice are also given.

K. has observed in Sweden two protozoa, of which *Eimeria falceiformis* occurs as a fatal enteric parasite. The sporozoan parasite *Klossiella muris* has low pathogenicity and is to be found mainly in the kidneys, but sometimes also in other internal organs. These two protozoa have been observed, but not the following, which are known to infect

mice—*Entamoeba muris*, *Leucocytozoan musculi*, *Sarcocystis muris*, *Trichomonas muris*, *Hexamitus muris* and *Lambliia muris*.

Of the cestodes *Hymenolepis fraterna* is common and *H. diminuta* a minor parasite. They are described in detail. Other tapeworms known to occur in mice are *Mesocestoides lineatus*, *Taenia microstoma*, *T. leptcephala*, *T. pusilla*, *T. lineata* and others. *Cyticercus fasciolaris* has been found.

Of the nematodes *Aspicularis tetraaptera* and *Gyphacia obvelata* are commonest.

Of the arthropod parasites K. describes *Nyobia musculi*, *Myocoptes musculus* and *Ceratomyllus sciatus*.—J. E.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

ERLICH, I. (1942.) Mallophaga purana (Melegris gallopavo L.). [Biting lice of turkeys.]—*Vet. Archiv.* **12**. 492–494. [Abst. from German summary.] **331**

E. describes and lists the species of Mallophaga found on 50 turkeys.—J. H.

MIKAČIĆ, D. (1946.) Bilješke o invaziji jedne mušice (Simuliidae) u okolici Garešnice. [A plague of *Simulium reptans* in Croatia.]—*Vet. Archiv.* **16**. 29–31. [Abst. from French summary.] **332**

M. describes a serious plague of *Simulium reptans* in Croatia in 1937. Horses, other domestic animals and human beings were attacked, the serious consequences following in cattle alone. Bite lesions were present on the udder, neck, stomach and thighs of cattle. There was oedema of the udder and neck.—J. H.

*HOHORST, W. (1942.) Wenig bekannte Hühner-Mallophagen. [Little known Mallophaga of fowls.]—*Senckenbergiana.* **25**. 222–255. [Abst.

from abst. in *Jber. Vet.-Med.* **71**. 291. (1943).] **333**

Of 161 individuals of domestic poultry examined in the Frankfurt-on-Main district, 32 were found to be infested with *Uchida pallidulus* and 17 with *Menacanthus cornutus*. The same two species were found in domestic poultry from China.—L. DAVIES.

CHUNG, H. L., & FENG, L. C. (1941.) Further observations on natural infection of *Phlebotomus chinensis* in Peiping with leishmania flagellates. —*Chin. med. J.* **59**. 540–542. **334**

In a previous publication the authors described the natural infection of *Phlebotomus chinensis* with leishmania flagellates. They now describe the dissection of 57 individuals collected from a kennel in Peiping in which a three-year-old dog had had symptoms of kala-azar for 4–5 months and which had face lesions in which *Leishmania donovani* could be demonstrated. The blood of infested dogs was positive to tests for

increased globulin content; P.M. examination revealed leishmaniasis involving the skin, spleen, liver and bone marrow.

Of the 57 flies dissected, 84 (60%) were infected with leishmania flagellates, which were in all cases found in the midgut, although in one fly infection extended to the proboscis. Flagellates from two flies were suspended in normal saline and inoculated into a hamster; nearly eight months later a liver puncture was made, but no L.D. bodies were found in smears from the aspirated material. Ten months after inoculation the hamster was killed and smears and sections from the spleen, liver and bone marrow contained numerous L.D. bodies.—S. M. G.

SMART, J. (1944.) **The British Simuliidae. With keys to the species in the adult, pupal and larval stages.**—*Sci. Publ.* No. 9. pp. 57. Ambleside, Westmorland: Freshwater Biological Association. [8vo]. [2s. 6d.] **335**

An adequate and clear description is given of the morphology of larval, pupal and adult stages, followed by keys for determining the species.
—B. THURSTON.

GRENIER, P. (1943.) Observations sur quelques stations de similies. Parasites et prédateurs des larves et nymphes. [Several breeding places of *Simulium*. The parasites and predators of the larvae and pupae.]—*Bull. Soc. Path. exot.* **36**, 105–110. **336**

Observations on several streams in the forest areas of Compiègne and L'Aigle (France) revealed the following parasites and predators of the larvae and pupae of *Simulium equinum*, *S. ornatum* and *S. aureum*. Two species of Protozoa and Thrips (*Aelothrips*) were the most important parasites.

Larvae of the Diptera *Orthocladus* (the Chironomid midge *Rhyacophila*) comprised the predators. The small larvae of some Trichoptera and of Hydrachnids were observed living as commensals within simuliid cocoons.

The effects of predators and parasites on simuliid larvae and pupae are not of great importance in reducing populations, since the adults are very fecund.—L. DAVIES.

DELPY, M. L. P. (1946.) Revision par des voies expérimentales du genre *Hyalomma* C. L. Koch 1844. (Acarina, Ixodoidea, Ixodidae.) Note préliminaire. [Revision of the genus *Hyalomma*.]—*Arch. Inst. d'Hessarek.* **2**, No. 2, 61–94. [In French.] **337**

This paper gives an account of work done to clarify the systematics of the genus *Hyalomma*, where a multiplicity of "species" has arisen, partly because of the great variation in size and colouration of individuals. Large numbers of ticks were obtained from several European and

Middle Eastern countries, as well as from several parts of Africa, and breeding experiments carried out. The progeny of each tick were isolated, inbred, and ticks reared up to the third generation. In this way, the number of true species of *Hyalomma* present was studied and the variations within species measured. Seven species (one new) and two varieties were distinguished. Detailed keys of males and females, diagrams of males, and the life histories of these ticks are included.—L. D.

LUCAS, K. M., & ROBERTS, F. H. S. (1946.) **Psoroptic otacariasis of the horse. With a note on the identity of the parasite.**—*Aust. vet. J.* **22**, 186. **338**

Several cases of infestation of the external ear of horses with a mite presumed to be *Psoroptes hippotus* were seen in Queensland. The clinical indications of the infestation were irritation of the ears, shown by shaking the head, rubbing the ears and a touchiness of the poll.

The mites showed no morphological differences from *P. communis* var. *ovis* or *P. communis* var. *cuniculi*. The former of these has not been seen in Australia for over 50 years, but the latter is not uncommon. In view of the marked host-specificity of mites of this genus it appears unlikely that those recovered from the horses had been acquired from rabbits.—H. McL. GORDON.

BOUVIER, G. (1947.) Les gales des bovidés dans le canton de Vaud. [Mange in cattle in the Vaud district of Switzerland.]—*Schweiz. Arch. Tierheilk.* **89**, 167–175. [In French.] **339**

Four distinct types of mange in cattle are dealt with. *Demodex bovis* causes the occurrence of pustules the size of a pea mainly on the neck and the shoulder regions, and does not cause serious harm. *Psoroptes equi* var. *bovis* starts infection at the base of the tail, extending along the back and finally descending to the lower parts of the trunk. The irritation caused to cattle does not appear to be intense, but it is severe when transferred to man.

It is suggested that *Sarcoptes scabiei* is a variety specific and highly contagious to cattle since it rarely becomes transferred from cattle to man. B. discusses treatment, referring to sodium hyposulphite-HCl method and to the use of rotenone and gammexane (hexachlorocyclohexane) preparations.—L. DAVIES.

FRITZSCHE, K. (1944.) Beitrag zur Kenntnis der Sarcoptes-Räude beim Kaninchen. [Sarcoptic mange in rabbits.]—*Z. Veterinärk.* **56**, 257–258. **340**

A brief account of mange in rabbits attributed to "*Sarcoptes squariformis*—*scabiei* var. *cuniculi*", said to be rare in Germany, but common in France and Italy. Reference is made to the type

of lesion produced—on the snout, paws, near the bases of the claws and at the corners of the eyes. Emphasis is laid on eradication by killing off the affected animals.—L. DAVIES.

HEATH, G. B. S. (1946.) The value of D.D.T. and "666" as anti-ked sheep dips.—*Vet. J.* 102. 282-285. 341

D.D.T. and "666" at bath concentrations of 0.5%, 0.25% and 0.125% were used as anti-ked sheep dips, using groups of two sheep each. Keds caught on other sheep were placed in the fleeces of the D.D.T. dipped sheep, and in some cases heavily infested undipped sheep were run with the experimental sheep. The efficacy of each dip was estimated by making almost daily counts of living and dead keds in the fleeces. A bath concentration of 0.125% of D.D.T. or "666" appears

See also absts. 241 (staphylococcal infection in lambs and tick bites), 277 (transmission of plague); 282 (fleas transmitting salmonellosis); 405, 406 (parasiticides); 407 (ticks and theileriasis); 433-440 (annual reports).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

CHRISTENSEN, N. O. (1945.) A clinically and pathologico-anatomically characteristic case of trichostrongylosis in the horse.—*Skand. Vet. Tidsskr.* 35. 49-55. [In English.] 343

Trichostrongylus axei has appeared from previous investigations to occur in 36% of the horses examined [CHRISTENSEN & ROTH, see *V. B.* 13. 392]. Characteristic changes in the stomach are regarded as pathognomonic.

The changes in the stomach of a twelve-year-old mare are described. In this typical case of infection with *T. axei* there had been a history of illness for about nine months; temperature was normal and there was no diarrhoea. The animal was then killed. P.M. examination showed extensive changes in the stomach but no other pathological condition. A stomach content of about 1,000 *T. axei* was assessed by several samples after dilution. Considerable hypertrophy, in places adenomatous, was observed in sectioned material from the glandular part of the stomach.

It is considered that the pathological significance of *T. axei* in the horse is confirmed. It is suggested that infection of horses is likely to occur as the result of simultaneous or rotational grazing with horses and ruminants.—S. BRIAN KENDALL.

HUMMELINCK, P. W. (1946.) Onderzoekingen over de ontwikkelingssnelheid van eieren en larven van paardenstrongylden. [Development of eggs and larvae of horse strongyles].—*Tijdschr. Diergeneesk.* 71. 842-852. [English and German summaries. Abst. amended from German summary.] 344

Development of strongyle eggs in horse faeces takes place most rapidly at about 30°C., at which temperature the first larval stage may be reached

to be sufficient to render fleece toxic over a period of time sufficient to eradicate keds from any isolated group of sheep.—L. DAVIES.

ZUMPT, F. (1944.) Flugzeugeinsatz zur Stechmückenbekämpfung. [Use of aircraft in mosquito control in Russia].—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* 52/50. 299-300. 342

An account is given of spraying and dusting operations from aircraft against the larvae of malarial mosquitoes in the Dnieper basin (Ukraine). A spray emulsion of petroleum and "Schweinfurt green" [cupric acetoarsenite], and also dusts containing various arsenical compounds and thiodiphenylamine were employed. All proved effective and had a low toxicity for warm blooded animals.—L. DAVIES.

in 10 hours. Higher temperatures are prejudicial and at 40°C. development ceases. By reducing the temperature, development can be greatly retarded: at 18° the first larval stage will be reached in about 1½ days, but at 8° only after 12 days. Probably at 3° all development has ceased. —F. E. W.

— (1943.) Laboratory tests for trichiniasis.—*Lancet.* 245. 295. 345

There has been considerable doubt about the value of specific skin and precipitin tests for the diagnosis of trichiniasis. Undoubtedly much infection is never diagnosed. In the U.S.A., P.M. examination of human diaphragms has shown an infection rate as high as 93%. There have been few large-scale attempts to correlate autopsy or operation findings with skin tests. The results have been variable.

GOULD, S. E. [see *V. B.* 13. 323 and 391] carried out 3,010 skin tests and 1,231 unrelated autopsies with human subjects. He found that while infection incidence increased with age, positive reaction to the skin test decreased.

With 388 skin tests of people who were later examined P.M., of 89 who were positive at autopsy only 10.1% had given positive skin tests. Of 299 in whom no trichinae were found, positive skin tests had been given by 5.4%.

MELCHER, L. R., & CAMPBELL, D. M. [see *V. B.* 16. 228] isolated a serologically specific polysaccharide from trichinae and obtained good precipitin reactions with the serum of infected rabbits. Positive skin tests also were given.

The possibility of developing a reliable diagnostic test for old trichiniasis is considered remote and even with acute trichiniasis the test

must be considerably improved to be specific or sensitive.—S. BRIAN KENDALL.

JOYEUX, C., & GAUD, J. (1946.) Recherches helminthologiques Marocaines. [Vermineous pneumonia in Morocco.]—*Arch. Inst. Pasteur Maroc.* 3. 383-461. Previous part not of veterinary interest. 346

The study is primarily concerned with three nematodes causing verminous pneumonia. The presence in Morocco of *Dictyocaulus filaria* which gives rise to a bronchitis is also noted. The three nematodes are *Protostrongylus rufescens*, *Cystocaulus ocreatus* and *Müllerins minutissimus*. Of these, *P. rufescens* and *M. minutissimus* are rare in Morocco although they are common in countries with temperate climates. *C. ocreatus* is the dominant species in Morocco and in Corsica and is found in the south-west of France. Its apparent preference for hot, dry climates may be due to its adaptation to certain xerophilic molluscs as intermediate hosts.

P. rufescens occurs not only in sheep and goats but in rabbits and hares. It is possibly synonymous with *Filaria terminalis* (PASSERINI, 1884) but has been confused with *P. pulmonalis*, a worm which appears to be absent from western Europe. There appears to be no morphological difference between the "sheep" and "rabbit" varieties of *P. rufescens* but cross-infestation experiments were not successful. On these grounds the authors propose *Protostrongylus rufescens* (LEUCKART, 1865) var. nov. *cuniculorum*. *C. ocreatus* has been confused in the past with a number of other species and it is probable that it is synonymous with *C. nigrescens* (JERKE, 1911).

The details of the life histories are given,

See also absts. 331 (parasites of mice); 365 (in game animals); 408 (anthelmintics); 433-440 (annual reports).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

SIMON, M. A. (1947.) So-called pulmonary adenomatosis and "alveolar cell tumors". Report of a case.—*Amer. J. Path.* 23. 419-421. 348

A case of benign pulmonary adenomatosis in an aged woman is described. The histology of the lesions resembled very closely that seen in *Jaagziekte* in sheep. [see *V. B.* 10. 274]. S. discusses this case and 12 other human cases described in the literature and concludes that "pulmonary adenomatosis and alveolar cell tumours may be regarded as unusual forms of pulmonary carcinoma presumably arising from the alveolar lining cells".—A. R. JENNINGS.

STEWART, H. L., GRADY, H. G., & ANDERVONT, H. B. (1947.) Development of sarcoma at site

much of the information being conventional.

Details are given of snails capable of acting as intermediate hosts. Rabbits fed with molluscs containing infective larvae of *P. rufescens* var. *cuniculorum* become infested with adult worms within 26-37 days.

It has been found possible to bring about the artificial infestation of many species of snails with the larvae of all three nematodes, provided that the skin of the snail is sufficiently tender to allow their penetration. Only in certain species, however, will further development proceed and even in these the larva degenerates after a period of time (a maximum of 210 days in the experiments under review), thus in less than a year an infested snail ceases to be infective. It is suggested that this might have some bearing on prophylaxis. It was not possible to show experimentally that *P. rufescens* exhibited a preference for any particular species of intermediate host. The larvae of *C. ocreatus*, however, developed best in *Euparypha pisana* and in *Cochlicella acuta*, both of which are common in Morocco.—R. P. HILL.

MIKAČIĆ, D., & ERLICH, I. (1940.) Entoparasit-ska fauna guske. [Helminth parasites of geese in Yugoslavia.]—*Vet. Arhiv.* 10. 379-390. [Abst. from French summary.] 347

Fifty autopsies were carried out on geese from Zagreb. Two species of trematodes, six species of cestodes, ten species of nematodes and one acanthocephala were found. Four female and two male *Tetrameres gigas* were an interesting discovery, and the economic danger of *Amidostomum anseris* and *Hymenolepis setigera* found in large numbers in the same intestine is pointed out.—J. H.

of serial transplantation of pulmonary tumors in inbred mice.—*J. nat. Cancer Inst.* 7. 207-225. [Authors' summary copied verbatim.] 349

Histopathologic studies of 22 primary pulmonary tumors arising spontaneously or induced with 1,2,5,6-dibenzanthracene in inbred mice of several strains showed that during repeated transplantations 11 of these developed a change in the character of the growths, which represents a transition from an epithelial pattern to a fibrosarcoma.

The transplants of the various tumor strains could be divided into several histologic types, which were often intermingled or predominantly of a single type.

The acinous carcinoma type preserved the

original glandular character and was uniform in appearance.

The nonacinous carcinoma type possessed an epithelial pattern but did not reproduce acinous formation; instead the epithelial-appearing cells were arranged in columns, nests, or solid sheets.

The sarcoma type possessed all the structural features upon which a histologic diagnosis of fibrosarcoma is based. The various combinations of the types observed are described.

A study of the final histologic status of the various tumors and their collateral lines shows that in 5 lines the tumor transplant had become wholly sarcomatous in type while in an additional 13 lines the tumor was composed of a combination of sarcomatous and carcinomatous structure.

The theoretical mechanisms and underlying causes of sarcomatous transformation following serial transplantation of primary pulmonary tumors of the mouse were explored, but no positive conclusion was reached.

I. *VON DEHN, M. (1943.) Zur Frage der antigonadotropen Wirkung von Carcinomseren. [The question of the antigonadotropic action of cancer sera.]—*Z. Krebsforsch.* 54. 39–50. [Abst. in *Cancer Res.* 5. 124. (1945.), copied verbatim. Signed: M. H. P.] 350

II. *VON DEHN, M. (1943.) Zur Frage der Inaktivierung des Melanophorenhormons durch Ca-Seren. [Inactivation of melanophore hormone by carcinoma serum.]—*Ibid.* 51–54. [Abst. from abst. in *Cancer Res.* 5. 124. (1945).] 351

I. Antigonadotropic factor occurs more frequently in the serum of cancer patients than in that of noncancerous persons, but cannot be considered as specific diagnostic evidence of cancer. The incidence of antigonadotropic factor (manifested in the corpus luteum test and in the ovarian weight increase test) was 79% in 61 sera from cancer patients, 65% in 64 sera from noncancerous patients. Some of the sera of the latter group increased, rather than antagonized, the gonadotropic reaction.

II. Melanophore hormone inactivating substance occurred in 22% of sera from carcinomatous subjects, in 12% of other sera. The demonstration of this substance could not, therefore, be used as a means of diagnosis. The results differ from those of Rodewald, who found it in almost all carcinoma sera tested, and in only occasional samples of other sera.

LACASSAGNE, A. (1944.) Les rapports entre les hormones sexuelle et la formation du cancer. [The relation between sex hormones and the formation of cancer.]—*Ergebn. Vit.- u. Hormon-Forsch.* 2. 259–296. 352

This review deals with the literature up to 1938. Most of it is devoted to the action of oestrogens in producing tumours of the mammary gland and in other organs, but there is a brief section on the effects of progesterone and of testosterone. In susceptible strains of mice, ovariectomy prevented the appearance of spontaneous mammary cancer, while oestrogen administration led to an earlier and more frequent development of mammary cancer in both sexes. In non-susceptible strains, oestrogen administration sometimes caused the development of mammary cancer in both sexes. In all strains, oestrogen administration sometimes also caused the appearance of malignant tumours and adenomata in other organs (e.g., uterus, pituitary). There is a discussion on whether oestrogens should be regarded as carcinogenic substances, but no definite conclusion is reached.—J. M. R.

GARDNER, W. U. (1944.) Tumors in experimental animals receiving steroid hormones.—*Surgery.* 16. 8–32. 353

Mammary, uterine, hypophyseal, testicular, lymphoid and osteogenic tumours appear in animals of some species or strains when they are exposed to oestrogens for prolonged periods. Among mice the mammary, hypophyseal, testicular and osteogenic tumours are restricted by factors or influences transmitted by the maternal parents. These factors (hereditary or genetic) or influences (milk influence) restrict the carcinogenic response of specific organs to animals of certain groups, but the oestrogen is required before these responses occur. The uterine cervical tumours and lymphoid tumours in oestrogenic treated mice have not yet revealed any accompanying factors essential for the development of malignancy. The possible mechanism of oestrogen action is discussed. Growth stimulation cannot explain it, since the tumours in the genital tissue do not appear during the active growth phases but rather after the greater part of the tissue has become somewhat refractory. It is possible that oestrogens act by increasing the physiological age of the tissues, so that other factors may bring about malignancy. Continuous and excessive oestrogen treatment frequently produces changes indicative of tissue damage in the organs in which tumours arise. It is possible that oestrogens may be altered chemically into products which are carcinogenic. The importance of further work on the mechanism by which oestrogens act in normal cells to augment their anabolic and proliferative function is stressed.—J. M. ROBSON.

ERRERA, M., & GREENSTEIN, J. P. (1947.) Desamidation of glutamine and asparagine in normal and neoplastic hepatic tissues.—*J. nat.*

Cancer Inst. 7. 285-288. [Authors' summary copied *verbatim*.] 354

The glutaminase and the asparaginase activity of normal, resting adult liver, of regenerating liver, of fetal liver, and of primary and transplanted hepatomas was determined, as was the effect of added pyruvate on the extent of desamidation of these amino acid amides.

Extracts of fetal liver and of the hepatoma possess appreciable glutaminase activity, and very

See also absts. 394 (gene action and mammary tumours in mice).

DISEASES [NON-INFECTIVE] OF BREEDING STOCK

I. CAROLI, J., & BESSIS, M. (1947.) Sur la cause et le traitement de l'ictère grave des muletons nouveau-nés. [**Cause and treatment of jaundice in newborn mule foals.**]—*C. R. Acad. Sci., Paris.* 224. 969-971. 355

Icterus in new born mule foals resulting in a mortality of 8% has been known for a long time and has been presumed to be due to ante-natal infection with *Babesia equi*. There is insufficient evidence in support of the theory.

The resemblance between the condition in the mule foals and *icterus neonatorum* in human infants suggests that it is due to the development in the mare of antibodies against donkey red cells as a result of giving birth to a foal sired by a donkey. Clinical, haematological and serological evidence is produced to support this hypothesis. For example, the mares which have given birth to jaundiced mule foals do not present any evidence of chronic piroplasmosis, the disease becomes evident in the foal within a few hours of birth, a mare having once given birth to a jaundiced mule foal will, so long as she is mated to a donkey, continue to produce affected foals but if mated to a horse her foal will be perfectly healthy.

The titre of serum antibodies against donkey and mule red cells is much higher in mares which have given birth to jaundiced mule foals than in normal mares or stallions.

For treatment of the condition they recommend massive transfusion of horse blood into the affected foal which is said to cure most of the cases.—M. C.

II. CAROLI, J., & BESSIS, M. (1947.) Immunisation de la mère par le foetus chez la Jument mulassière. Son rôle dans l'ictère grave du mulet. [**Immunization of the mare by the foetus in mares which have bred mule foals and its rôle in *Icterus neonatorum* of the mule.**]—*C. R. Soc. Biol. Paris.* 141. 386-387. 356

The authors determined the titres of serum antibodies against donkey red cells formed in

little asparaginase activity. Extracts of resting adult liver and of regenerating liver possess very little glutaminase activity but have high asparaginase activity. The desamidation of both amides is considerably increased in all four kinds of homologous hepatic tissues by the addition of pyruvate. The possession of this pyruvate effect is a nearly unique characteristic of hepatic tissues whether normal or neoplastic.

three groups of mares. The average titre in 17 mares which had given birth only to horse foals was 0.8; in 11 mares which had given birth to normal mule foals it was 12.6, while in 15 mares which had given birth to mule foals affected with *icterus gravis neonatorum*, the average titre was 43.4. There was no similar variation amongst the three groups in respect to titres of serum antibodies against human or rat red cells.

These findings are put forward as further evidence indicating that the cause of *icterus gravis neonatorum* in mule foals is due to hetero-specific immunization of the mare by the red cell antigens of the mule foetus during gestation.—R. COOMBS.

III. BESSIS, M., & CAROLI, J. (1947.) Anticorps anti-Mulets incomplets et bloquants chez la Jument mère de mulet icterique. [**Blocking antibodies in mares which have given birth to jaundiced mule foals.**]—*C. R. Soc. Biol. Paris.* 141. 387. 357

The authors have found that the antibodies against donkey red cells, which occur in the serum of mares with mule foals affected with *icterus gravis neonatorum*, are sometimes of the so-called "incomplete" or "blocking" variety—i.e., they sensitize the cells but fail to cause agglutination, when tested *in vitro* by the usual agglutination technique.

These antibodies are able specifically to inhibit the homologous agglutinin and may also be demonstrated by *in vitro* agglutination tests, if saline as the suspending fluid is replaced by compatible homologous undiluted serum.

The association of "incomplete" antibodies with immunization is further suggestive that the raised serum antibody titre against the red cells of the donkey is due to an immune response to the "hetero-specific" mating.—R. COOMBS.

BENSON, K. (1942.) Insemineringsarbejder i Praksis. [**Experiences of insemination work.**]—*Maanedsskr. Dyrlaeger.* 53. 473-487. 358
B. relates the experiences of three years'

insemination work. He describes his orthodox technique, giving results in tabular and graphical form. In the first year 592 cows were artificially inseminated, 286 of these requiring only one service; in the second year the corresponding figures were 699 and 376, and in the third year 766 and 435.—J. E.

BLOM, E. (1946.) **A comparing-chamber for microscopic examination of undiluted bull semen.**—*Vet. J.* 102. 253-259. 359

The method is designed for rapid use in the field. The production of wave-motion in raw semen is discussed in considerable detail [some of B.'s statements are distinctly controversial], semen being graded on the extent to which this phenomenon is shown. B. considers 350μ the optimum film-thickness for the purpose. The comparing chamber is designed to provide such a film and at the same time films of 50μ for density estimations and very thin ones for the examination of individual sperms are used. Three different powers of the microscope are used for the examination, having respectively $\times 25$, 100 and 400 lineal magnifications. In the 50μ film, with experience, density can be estimated by eye, samples being grouped into four classes, up to 200 thousand, 200-500 thousand, 500-1,000 thousand and over one million per cu. mm. Operators have been found quite accurate within these limits as checked by complete sperm counts. A form for recording the bull's "score" on this system, which checks wave motion against density, is attached.

[This appears to be a useful advance in technique and might well be applied as a routine method for individual bulls over a period, when the results would often be most instructive. At the same time, B. seems to overestimate the difficulty of making an accurate sperm count with haematological apparatus.]—F. L. M. DAWSON.

I. GOERTTLER, V. (1942.) **Grundsätzliches zur Frage der künstlichen Besamung. [The fundamentals of the question of artificial insemination.]**—*Berl. Münch. tierärztl. Wschr.* July 10th. 207-209. 360

II. GÖTZE, R. (1942.) **Hat die künstliche Befamung der landwirtschaftlichen Haustiere für das Reich und die Ostgebiete eine Zukunft? [Has artificial insemination a future in Germany and the Eastern States?]**—*Dtsch. landw. Tierz.* 46. 291-293. 361

III. GOERTTLER, V. (1942.) **Grundsätzliches zur Frage der künstlichen Befamung. [Fundamental aspects of the problem of artificial insemination.]**—*Dtsch. landw. Tierz.* 46. 317-320. 362

IV. GOERTTLER, V. (1943.) **Soll die Zukunft der künstlichen Besamung erörtert werden?**

[Discussion on the future of artificial insemination.]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* May 14th. 143-145. See also *V. B.* 16. 366.] 363

In an abstract of these papers at the present time it is only necessary to deal with the broad issues which are the subject of controversy.

Goerttler I and III discusses in detail all aspects of artificial insemination and comes to the conclusion that it is at least premature to introduce it into Germany. Götze on the other hand gives his approval unreservedly and says that A.I. can be very useful in increasing the livestock population quickly, which is required especially in the conquered eastern territories.

Goerttler considers that the general introduction of A.I. into Germany would act adversely upon pedigree breeding, as it would result in an inbred livestock population with a consequent risk of increase in inherited defects. He advocates instead an increase in effort to improve all the German breeds by orthodox methods utilizing natural mating.—J. E.

JOHANSSON, I., & HANSSON, A. (1943.) **The sex ratio and multiple births in sheep.**—*Lantbr.-högskol. Ann. Uppsala.* 11. 145-171. [In English.] 364

The existing literature on the subject is reviewed. The secondary sex ratio for sheep in Sweden is found to be 50 ± 0.289 for single births, decreasing to 43.48 ± 3.655 for quadruplets. The authors discuss the possibility of a selective factor producing intra-uterine mortality in the male. The sex ratio for still births shows no significant difference and therefore stillbirth is not a factor in male elimination. However, the secondary sex ratio at two months (covering post-natal mortality) shows a greater decrease with litter size. The sex selective intra-uterine mortality factor appears to function early in pregnancy.

In Swedish sheep, twinning occurs in 45% of cases. Where T is the twinning frequency, the frequency of other multiple births is as follows:—triplets $0.05 T$, quadruplets $0.05^2 T$, quintuplets $0.05^3 T$. There is no statistical evidence for monozygous twins and their occurrence has only been reported a few times.

The fertility of ewes increases with age, the maximum is reached at six years. Lambing at one year of age is frequent in the native Swedish sheep (Landrace F) and is the rule on the island of Gotland (Landrace G). Selection has no significant effect on "age fertility". There is no correlation between the body weight of the ewe and fertility between breeds, but a positive correlation occurs within the breeds.

Multiple births appear most frequent in ewes

mated at the height of the breeding season, *i.e.*, the middle.

The effect of late summer and early autumn temperatures and the length of daylight are considered to be paramount factors positively influencing multiple births.

See also absts. 284 (A.I. and transmission of brucellosis by bulls); 379 (nutrition and breeding efficiency in bulls); 381 (puerperal haemoglobinuria in cows); 392 (virilism); 444 (genetics); 445 (genetics in its application to veterinary medicine).

DISEASES, GENERAL

BOUVIER, G. (1947.) Observations sur les maladies du Gibier en 1946. [Diseases of game animals 1946.]—*Schweiz. Arch. Tierheilk.* 89. 240–254. [In French.] 365

An account is given of complete and partial P.M. examinations carried out in Switzerland during 1946 on a wild goat, two deer, eight chamois, 22 roe deer, 130 hares, two marmots, three foxes and a wild boar. These animals or some of their organs had been sent in to the Institute in Lausanne after special requests had been extended to forest authorities, private hunters and game keepers.

The wild goat presented multiple fractures due to accident. The nasal cavities of one deer were infested by larvae of *Pharyngomia picta*. The other had numerous fleas of the species *Cervophthirus crassicornis*. On the chamois *Ixodes ricinus* was frequently found, but *Melophagus rhipicaprinus* only rarely; occasionally *Trichodectes climax* was found, although this is usually regarded as a parasite of sheep. Parasitic bronchitis due to *Protostrongylus rufescens* is often fatal for the chamois. One animal died from severe anaemia caused by *Fasciola hepatica*, another to a double infection of *Chabertia ovina* and *Cysticercus tenuicollis*. A third had pneumonia due to pasteurellosis. On the coat of roe deer, *Mallophaga* and *Ixodes ricinus* were frequently encountered. The larvae of *Cephenomyia stimulator* were common in some parts of Switzerland, up to 50 larvae were counted in a nasal cavity of one doe. In spite of special investigations no case of *Hypoderma diana* was seen among the deer although this is very common in Germany and France. *Dictyocaulus viviparus* is quite common, but apparently not so fatal as *Protostrongylus rufescens* is for chamois. Roe deer seem to be very resistant to all kinds of disease: only two cases were seen; one of an old standing streptococcal abscess of the head which had penetrated to the brain and tuberculous (human type) broncho-pneumonia.

Ectoparasites had usually left the body of the hares before their arrival at the laboratory but helminths were frequently found. Most common were *Dicrocoelium lanceolatum* and *Fasciola hepatica*, with *Trichuris leporis* and *Trichostrongylus*

The sire is not considered *per se* to influence multiple births but the hereditary effect of the dam's sire is considered significant. Sire selection and progeny testing are recommended. Selection of ewes should be based on average litter size.
—A. G. WARREN.

retortiformis less usual; *Eimeria stiedae*, *E. perforans* and *E. magna* were especially dangerous for young hares in rainy years. Bacterial diseases seemed to be less frequent, although more serious: pseudotuberculosis, pasteurellosis and septicaemia were found, but brucellosis, probably picked up on pasture contaminated by infected cows was the most interesting disease. Some sarcomata and adenomata were seen among older subjects. A marmot found dying during hibernation, was heavily parasitized by thousands of ascarides and *Laelaps agilis*. In another marmot's bile, 620 eggs of *Dicrocoelium lanceolatum* were found. Two foxes were hosts of a mixed infestation of *Trichodectes vulpis*, *Opisthorchis felineus*, *Toxacara vulpis*, *Taenia pisiformis* and *Mesocestoides lineatum*. A wild boar was found to be infested by *Haematopinus suis*.—C. AHARONI.

MARKSON, L. M. (1947.) Two cases of periarthritis nodosa in the ox.—*Vet. J.* 103. 179–184. 366

M. reviews the literature of this disease as it occurs in animals other than man, describes the histology of the lesions in two cattle and discusses briefly the causation. No metazoan parasites nor their remains were observed in the two specimens examined. On account of the difficulty of diagnosing the condition during life it is of interest mainly to the meat inspector and the research worker.—M. C.

ANTHONY, D. J. (1947.) Some pig diseases.—*Vet. Rec.* 59. 37–39. 367

This is a general description of the incidence, diagnosis, lesions and causation of diseases of pigs as seen in Gt. Britain especially in pigs as delivered to bacon factories. The changes in incidence of certain diseases resulting from war conditions is described. A. advises vaccination of pigs with cow-pox vaccine to prevent swine pox. In the discussion which followed BARRON queried the efficacy of this procedure and also described some of the nutritional inadequacies of wartime swill feeding.—M. C.

HOFFERD, R. M. (1944.) Diagnosis and control of some communicable swine diseases.—*Cornell Vet.* 34. 152–173. 368

A review article summarizing existing clinical knowledge of the commoner diseases of swine encountered in North America.—J. A. J. VENN.

— (1945.) **Report of special committee on diseases of baby pigs.** Illinois State Veterinary Medical Association.—*N. Amer. Vet.* 26. 345–347. 369

The Report, noting the fact that 75% of pig mortality occurs before weaning, summarizes the factors of disease and management which are responsible for these losses. Having discussed the need for healthy stock and adequate nutrition of the sow, short notes are appended on the following conditions: Ketosis of sows, thick forelegs, myoclonia congenita (jittery pigs), piglet anaemia, scours, swine erysipelas, parasitic infestation, navel and enteric infections and baby pig disease (acute hypoglycaemia of newly born pigs).

—J. A. J. VENN.

MOORE, E. N. (1947.) **Diseases of turkeys in New York.**—*Cornell Vet.* 37. 112–120. 370

This paper was presented to a meeting of veterinary practitioners in an attempt to awake their interest in some of the problems of disease control amongst turkeys. It does not contain any information which has not already been published elsewhere.—J. D. BLAXLAND.

NOIRJEAN, P. (1945.) **L'hydrarthrose du grasset chez le poulain de la race des Franches-Montagnes. [Hydrarthrosis of the stifle in foals.]**—*Schweiz. Arch. Tierheilk.* 87. 163–174 & 211–221. [In French.] 371

A condition is described affecting foals which is not noticeable before the fifth week. There is first a hydrops of the femoro-tibial-patella joint, and, later, a dislocation of the patella to the outer side; never inwards or upwards. The left leg is more frequently affected than the right, but sometimes both legs are affected. A bad case may be permanently lame, carry one leg, and have atrophy of the muscles, but the majority show little or no lameness and recover under treatment. Such recovered animals may do slow work at 3–4 years, but tend to break down under fast work.

N. speculates on causation. The condition is normally rare in Switzerland due to the excellent upland pastures used by the horse breeders and the strict control of the stallions; but the incidence has recently been increased by attempts at horse breeding by unskilled lowland peasants due to the acute shortage of horses.

—R. MACGREGOR.

DREŽANČIĆ, I. (1940.) **Prilog dijagnostici porijekla žutice kod konja i pasa. (Disertaciona radnja iz god. 1940.) [Diagnosis of icterus in the horse and the dog.]**—*Vet. Arhiv.* 10.

347–363. [Abst. from French summary.] 372

D. describes the use of the van den Bergh test for the diagnosis of icterus in horses and dogs, by testing for bilirubin in blood serum. In hepatic icterus, direct reaction is always positive, i.e., the red colour appears immediately and reaches its maximum intensity in about 30 sec., but in haemolytic icterus direct reaction is always negative and indirect reaction positive, i.e., the colour appears in several minutes.

From tests on 28 horses and 13 dogs, D. concludes that with the necessary precautions the method is reliable. Bilirubin may be destroyed by daylight.

The higher the level of bilirubin in the blood, the more severe the icterus.—J. H.

SEIFRIED, O., & SASSENHOFF, I. (1940.) **Osteomyelosklerose bei Hühnern. Eine bei Haustieren bisher unbekannte, generalisierte Krankheit des Skelets. [Osteomyelosclerosis in hens. A hitherto unknown generalized disease of the skeletal system in domestic animals.]**—*Arch. wiss. prakt. Tierheilk.* 75. 411–444. 373

The abnormality of the bones of fowls which is described in detail was first encountered in the P.M. examination of a fowl which had been affected with severe anaemia. In further investigations on 200 fowls sent for P.M. diagnosis the condition was found to be present in 30% in varying degree. Birds of all breeds were affected and the majority came from large flocks.

This bone disease is not discernible during life as no structural change of the exterior of the bones occurs and bones have to be split in order to show the characteristic change which shows the invasion of the marrow cavity by an ossified substance based on the inner surface of the normal compact bone and growing inwards and invading the marrow cavity. The spongiosa substance is the seat of the new tissue formation. The condition is symmetrical throughout the skeleton. A proliferation of the bony trabeculae takes place in the spongiosa tissue; as the marrow becomes invaded the formation of blood corpuscles is inhibited.

Swelling of the liver and spleen is accompanied by the appearance of leucomyelomatous lesions. The authors state that a disease of this nature has not been detected in any other species of domestic animal. Osteomyelosclerosis differs from avian osteopetrosis which has been reported from the U.S.A.—J. E.

MELLGREN, J., & LUNDH, G. (1946.) **The anterior pituitary and the parathyroids in hypercalcaemia. A comparison between hyperparathyroidism and myelomatosis, with two reported cases of the latter disease.**—*Acta path.*

microbiol. scand. 23. 380-344. [In English.] 374

Marked hypercalcaemia was found in a case of myelomatosis uncomplicated by chronic renal insufficiency and in which there was no hyperfunction of the parathyroids. Specific pituitary changes (hypertrophic xanthoma-like chromophobes) described by MELLGREN (1936, 1943, 1945) and WILTON (1945, 1946) were absent. They are thus presumably not due to hypercalcaemia and may be a manifestation of parathyrotropic hyperfunction.—J. M. ROBSON.

BANDIER, E. (1941.) **Experiments of provoking perniciosiform anemia in pigs by pylorectomy.**—*Acta path. microbiol. scand.* 18. 389-399. [In English.] 375

In an attempt to produce pernicious anaemia artificially five five-month-old pigs were subjected to pylorectomy and three kept as controls. The pigs were under observation for six months. Throughout this period there was no significant change in the blood picture.

The article contains an account of the haematological technique employed. Results of the following examinations are recorded: erythrocyte, leucocyte, and reticulocyte counts, haemo-

globin, packed volume and mean cell diameter.

—J. A. J. VENN.

*GYATMATI, E. (1944.) [Two cases of severe leucosis in dogs.]—*Allatorv. Lapok.* 67. No. 11. [Abst. from abst. in *Tierärztl. Z.* No. 1. 11. (1944).] 376

Two dogs with leucosis showed a severe neutrophil leucocytosis; in one dog immature white cells were present in the blood stream, comprising then nearly half of the neutrophils which formed 90% of the white cells.

—E. COTCHIN.

NIEBERLE, K. (1940.) Sogenannte Akropachie (Bamberger-Mariesche Krankheit) beim Kücken. [So-called acropachy in chickens.]—*Arch. wiss. prakt. Tierheilk.* 75. 472-477. 377

N. cites four published records of this disease in fowls and describes one fresh case in a four-weeks-old chicken which showed greatly thickened long bones of the limbs. On P.M. examination the characteristic new sub-periosteal growth of spongy bone was observed. This is described and illustrated at low power magnification.—J. E.

See also absts. 355-357 (jaundice in mule foals); 433-440 (annual reports); 448 (the nature of disease. An outline of a unitary theory); 449 (periarteritis nodosa).

NUTRITIONAL AND METABOLIC DISORDERS

ALBRECHT, W. A. (1945.) **Diseriminations in food selection by animals.**—*Sci. Mon.*, N.Y. 60. No. 5. 347-352. [Abst. in *Biol. Abstr.* Sect. F. 19. 4, copied *verbatim*. Signed: H. F. COPELAND.] 378

A number of observations indicate that herbivorous animals will choose plants from better fertilized soils, despite the absence of differences perceptible by chemical analysis. Deer in the Ozark Mountains do not eat the local southern pine, yet ate plants from a fertilized nursery. Cattle tend to refuse sweet clover, lush grass where there have been animal droppings, and plants fertilized with N alone, while choosing white clover, blue grass, and plants fertilized with Ca and P. These facts were obtained by recording food choice of cattle from haystacks on the Poirot Farms in Missouri for 9 years after the applications of fertilizers. Hogs chose corn from self-feeders, and native rats nibbled stored corn, according to fertilizer treatments. The animal's choice is apparently always to the advantage of its own growth and reproduction.

JONES, I. R., DOUGHERTY, R. W., & HAAG, J. R. (1945.) **Relation of nutrition to growth and breeding performance in dairy bulls. I. Alfalfa hay rations.**—*J. Dairy Sci.* 28. 311-320. 379

Two Jersey and two Holstein bulls fed a basal

ration of lucerne hay (average crude protein content 14.7%) with the addition of disodium hydrogen phosphate, salt and potassium iodide solution, from 5-7 months of age until disposal at 32-41 months old, grew at a rate of 10-15% below normal until two years of age. Semen samples were collected by artificial vagina every month, and examined for motility, volume, sperm concentration, pH value and percentage of abnormal spermatozoa. The quality improved after 18 months of age and all bulls proved fertile on service from 24-40 months of age.

One bull of each of the same breeds was fed the above ration, together with a supplement of 1 lb. each of skim milk powder and oat groats after seven months of age, and grew at a normal rate. Monthly examination of semen samples as above revealed that the quality prior to 18 months of age was better than in the bulls fed the basal ration. Again the bulls proved fertile on service.

The Jersey bulls produced semen of smaller volume with higher sperm concentration than the Holsteins, although the total sperm per ejaculation, the average motility and pH values of the semen were not greatly different for the two breeds. The Jerseys produced a higher percentage of abnormal forms, particularly with tail deformities, although not in sufficient amounts for the semen to be

classed as of poor quality. Of 67 samples of semen, without regard for age or breed, with excellent initial motility, the average volume was 5.4 ml., sperm concentrations 1.12 millions per cu.mm., 11% spermatozoa were abnormal, and in 47 samples the initial pH value lay between 6.4 and 6.8.

The authors conclude that the greater growth, earlier maturity and better condition of the bulls given the supplementary feeding, was due more to the greater energy intake than to the increased amount or higher quality of the protein.—A. E.

HANDLER, P., & DUBIN, I. N. (1946.) **The significance of fatty infiltration in the development of hepatic cirrhosis due to choline deficiency.**—*J. Nutrit.* **31**, 141-159. 380

The production of liver necrosis and fibrosis in rats by the feeding of high fat, low protein diets is described, these conditions also proving optimal for the accumulation of liver fat. From the effects of thiamine deprivation and restricted food intake on rats under these conditions, it is suggested that the hepatic necrosis and fibrosis of choline deficiency may be the consequence of chronic fatty infiltration of the liver cells.—MARY C. LOBBAN.

BRUN, A. (1943.) Puerperal Haemoglobinurism Krigssygdom hos Malkekvaegtet. [Puerperal haemoglobinuria as a wartime disease in milch cows.]—*Maanedsskr. Dyrlaeger.* **54**, 224-228. 381

Towards the end of the first World War and for some time subsequently (1918-21) many cases of puerperal haemoglobinuria in dairy cows were reported in Denmark. Some investigators considered that this disease is due to protein deficiency, others that it is a question of intoxication.

The author does not consider that it is attributable to protein deficiency alone, as it occurs only when the cows are fed with swedes and there is a cessation of the disease with a change over to feeding with beets. Further, the less serious cases are cured (or at least the symptoms disappear) merely by changing the fodder from swedes to mangolds. Finally, there is more digestible pure protein per kg. in swedes than in mangolds.—R. PETER JONES.

BATE-SMITH, E. C. (1947.) **"Running fits" in dogs.**—*Vet. Rec.* **59**, 204. 382

Observation of some young bull-terriers suggested that a temporary condition of hypoglycaemia was the cause of "running fits" which were avoided when a feed of bread and milk was given before exercise and sugar given during exercise. [See, however, Mellanby's observations, *V. B.* **17**, 33, on the effect of agenzization of flour and the development of hysteria in dogs consuming the flour.]

The hypoglycaemia may be evident only during and immediately after exercise.—S. B. K.

VAN WAGTENDONK, W. J., & LAMFROM, H. (1945.) **A dietary factor essential for guinea pigs. VI. Changes in the distribution of acid-soluble phosphorus in the muscle during a deficiency of the antistiffness factor.**—*J. biol. Chem.* **158**, 421-424. [For previous parts I & II, see *V. B.* **14**, 25; and **15**, 7.] Parts III, IV, V not of veterinary interest. 383

Experiments on g. pigs raised on a diet deficient in the antistiffness factor have been described which showed that the impaired function of the muscle during a deficiency of this factor is correlated with a decrease of creatine phosphate and adenosine triphosphate and an increase of inorganic phosphate in the muscle.

The antistiffness factor and vitamin E apparently have different functions in the animal organisms since a vitamin E deficiency is characterized by a severe urinary excretion of creatine, but no creatine excretion was found when the diet deficient in the antistiffness factor was supplemented with α -tocopherol.—R. ALLCROFT.

MOORE, T., & WANG, Y. L. (1945.) **Hypervitaminosis A.**—*Biochem. J.* **39**, 222-228. 384

The induction of hypervitaminosis A in rats by the oral administration of vitamin A either in its purest available form, i.e., as crystalline vitamin A acetate, or as halibut liver oil is described. The most characteristic lesions were skeletal fractures, with a tendency to the formation of large, irregular calluses, and internal or external haemorrhage. Fractures occurred most consistently in young rats. Uterine haemorrhage in pregnant rats was produced by excess of cod liver oil, halibut liver oil or vitamin A acetate, and is considered to be a special manifestation of the general liability to haemorrhage in hypervitaminosis A.—M. C. L.

GULLICKSON, T. W., & FITCH, J. B. (1944.) **Effect of adding cod liver oil to the rations of dairy calves.**—*J. Dairy Sci.* **27**, 331-335. 385

Some of the calves born in the dairy herd at the University of Minnesota farm were weak at birth, developed badly and mortality occurred.

25-35 ml. of cod liver oil (U.S.P.) were fed to a group of calves which included Guernseys, Holsteins and Jerseys. It is suggested that less digestive disturbances occurred with the treated than with the control animals. An increase in body weight was noted with the Guernsey and Jersey calves.—S. BRIAN KENDALL.

LETARD, E. (1945.) Les levures. Propriétés biologiques essentielles au point de vue de l'hygiène. Application à l'alimentation des animaux. [Yeasts in the nutrition of animals.]—*Rev. Path. comp.* **45**, 249-254. 386

The possibility of the recovery of material of high nutritional value from industrial procedures using yeasts (*i.e.*, brewing, baking, distilling) are discussed, together with the processes to which the yeast residues must be subjected in order to render them palatable to animals. The products have a high protein content and are a rich source of the vitamin B complex. Feeding-trial experiments on the horse, milch cow, pig, fowl and laboratory animals show that treated yeasts contain nitrogenous constituents of high digestibility and also augment the digestibility of other proteins in the ration. Warning is given, however, that the feeding of fresh yeast in large amounts gives rise to digestive disorders. Claims are made that yeast raises the resistance to certain diseases and it is suggested that yeasts be used not only therapeutically, but as part of the normal ration.

—MARY C. LOBBAN.

MUIR, W. R. (1946.) **Reflections on animal diseases and changes in grassland husbandry on reading the article of H. W. Bennett, E. J. Underwood & F. L. Shier.**—*Vet. J.* 102. 352–353. 387

The serious reproductive disorders which have developed in sheep grazed on subterranean clover pastures in Western Australia give rise to speculations on the wisdom of using ley pastures consisting of pure stands of one variety of grass. A mixed population of grasses, legumes and weeds

See also absts. 395 (mineral metabolism and fluorosis in cattle); 433–440 (annual reports).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

DA ROSA, F. M. (1945.) **Uma nova mutação, luxação congénita da anca, no coelho. [Hereditary congenital luxation of the hip in rabbits.]**—*Rev. Med. vet., Lisboa.* 40. 103–125. [Abst. from English summary.] 389

The author describes a new mutation, apparently a simple autosomic gene, which produces congenital luxation of the hip in the rabbit, becoming apparent at 2–4 months of age. The acetabulum on the side of the dislocation is flattened and shallow; the head of the femur is smaller than usual and the femoral neck is very narrow and movement is irregular.

The mutation was observed in a family of dark chinchilla with blue eyes, and carrying the albino gene. It originated from an outcross of a male of normal phenotype, but probably constituting the first heterozygote. The offspring of this outcross were normal, but in each of the sub-families of three daughters the congenital malformation appeared. The character is due to a simple recessive autosomic gene.

v.d. KAAJ, F. C. (1942.) **Functioneel onderzoek**

may be better for the maintenance of health in the grazing animal. The possible relationship between ley pastures and the aetiology of such conditions as grass-sickness of horses and enterotoxaemias associated with *Cl. welchii* infections in sheep is suggested.—M. C.

BENNETTS, H. W. (1946.) **Metaplasia in the sex organs of castrated male sheep maintained on early subterranean clover pastures.**—*Aust. vet. J.* 22. 70–78. 388

A description is given of the pathological processes observed in the male animal maintained on early subterranean clover. All changes were in castrated animals; two entire males examined showed no abnormalities.

Wethers showed marked test development and milk secretion, the development of a cul-de-sac communicating with the urethra and the occurrence of squamous metaplasia in the accessory sex organs and urethra. These changes were identical with those produced in two wethers by stilboestrol administration.

The cul-de-sac development, the changes in the bulbo-urethral glands, infection in the genitalia and urinary obstruction, all of which are common sequelae to metaplasia, are described histologically, clinically and at P.M. examination. Photographs of the organs and their histology are included.—N. WICKHAM.

van het corpus luteum, in het bijzonder bij het rund. [The function of the corpus luteum, especially in cattle.]—*Tijdschr. Diergeneesk.* 69. 73–82. Discussion p. 82. 390

This is mainly a review of the literature, given as a lecture to a veterinary society, but some original observations are included.

A large quantity of corpora lutea of pregnancy from cattle were collected and examined in order to discover the changes which take place throughout pregnancy. The corpus luteum was found to attain its greatest weight at 3½ months (*e.g.*, 5·2 grammes), thereafter decreasing gradually (*e.g.*, 1·8 g. at end of pregnancy). The progesterone content varied similarly, with a maximum at three months (*e.g.*, 272 γ) thereafter falling gradually (*e.g.*, 80 γ at nine months). The granulosa cells and theca cells were at their largest size at three months, also, but the fat content of the corpus luteum rose gradually, culminating graphically in a late steep curve to a maximum at seven months, thereafter falling slowly.

With regard to the known fact that abortion

can regularly be induced by enucleation of the corpus luteum up to the third month, but less surely after this point, various theories are open to consideration as to why pregnancy may continue after loss of the corpus luteum, the most likely one being that an additional influence to that of the corpus luteum operates. The author considers that a placental hormone comes into play. Some evidence to this effect is quoted from the literature.

—J. E.

TERRILL, C. E., & HAZEL, L. N. (1947.) **Length of gestation in range sheep.**—*Amer. J. vet. Res.* 66-72. 391

Data are given regarding the length of 2,499 gestation periods of range sheep. Normal periods were from 141-159 days, revealing a marked breed variation. The age of the ewe is the most important non-hereditary source of variation but the strongest influence upon length of gestation appears to be a hereditary effect exerted through the lamb. At least 40-50% of the variance can be attributed to hereditary factors (in both ewe and lamb) indicating the possibility of changing gestation length fairly rapidly by selection. The authors also find a significant relationship between length of gestation period and viability of lambs, periods slightly above the average in length being most favourable for survival of the lamb.

—MARY C. LOBBAN.

BERGER, L. (1945.) **New aspects of virilism.**—*Canad. Med. Ass. J.* 52. 445-450. 392

Phylogenetic evidence tends to show that ambisexuality pervades all living matter to phyla as high in the evolutionary scale as fishes. The separation of exclusively male or female gonads seems to have evolved from this. In both sexes the embryonic gonad has a bisexual organization, and the longer lasting male equivalent in the ovary, compared to the much shorter and less pronounced female counterpart in the testis, may explain the greater ease of spontaneous or experimental sex reversal from female to male. Morphological manifestations of bisexual organization are supplemented by hormonal ambisexuality, for example, the excretion of androgens and oestrogens in the urine of both male and female in man and the horse. The effect of hormones is illustrated by the freemartin in cattle. Many interesting examples are given of experimentally developed changes in sex.—R. GWATKIN.

KOGER, M., & TURNER, C. W. (1943.) **The effects of mild hyperthyroidism on growing animals of four species.**—*Res. Bull. Mo. agric. Exp. Sta.* No. 377. pp. 75. 393

A historical review is given of the literature dealing with the thyroid gland and hormone. The

effects of hyperthyroidism and hypothyroidism are discussed.

Experimental data are given mainly on the effect of mild induced hyperthyroidism on growth in four species of growing animals. After initial experiments to determine tolerance to thyroid material, four thyroidally active preparations—thyroxin-sodium and three different preparations of thyro-active iodocasein were used on mice, rats, g. pigs and rabbits. The four preparations produced comparable results. It was found that mice and female rats were relatively tolerant to thyro-active preparations while male rats, g. pigs and rabbits were relatively intolerant. The growth rate of mice was consistently and significantly increased by treatment with 0.01-0.04 mg. thyroxin-sodium daily or 0.04-0.32% thyro-active iodocasein in the ration. The amount of food eaten by the mice was increased by the treatment and they stored more protein and more body weight per unit of food consumed than the controls. The control animals were more efficient in storing fat and energy. They gradually approached the size of the treated animals and maximum final sizes were the same, so that the efficiency of the treated animals in utilizing food, decreased rapidly with the length of treatment. The effect of feeding thyro-active iodocasein to rats was variable. One strain of female rats showed a slight acceleration in growth rate and one strain of male rats showed an increase in body length. Slight acceleration in growth rate was observed in male g. pigs receiving 0.0025-0.0075% of thyro-active casein in their food. Small amounts of thyro-active casein did not affect the growth rate in rabbits but larger amounts depressed growth.

Very marked variability in response to thyroid treatment was shown by the animals tested. This variation was due to differences in species, strain, sex and in individuals and in different environmental conditions at the times of experiment.

Lack of standardization in experimental conditions is responsible for confusion in the literature.

The effects of mild thyroid treatment on body-organ weights are described and there is an account of a brief experiment on the thyroid-pituitary relationship.—S. BRIAN KENDALL.

HESTON, W. E. (1946.) **Paths of gene action in mammary-tumor development in mice.**—*J. nat. Cancer Inst.* 7. 79-85. 394

H. states and describes the possible paths of gene action:—the milk agent, hormonal stimulation and the susceptibility of the mammary tissue.

Although the experimental evidence is scanty H. points out that despite the presence of the milk factor and a "suitable hormonal influence" neo-

plasia may not develop in some strains of mice. This is ascribed to a lack of susceptible mammary tissue, due to the genetic constitution of the mouse.

Dealing next with the genetics of hormonal stimulation, H. reviews some of the earlier work on mice of a high tumour strain. Crossbreeding between two strains of this type showed marked differences between the strains in the incidence in virgin and breeding mice. This evidence of hormonal factors being involved was further substantiated by supplying oestrogens to the virgin

See also absts. 445 (technique of dissection of domestic animals).

females, with a consequent rise in their tumour incidence. Reciprocal crossing of these strains provided further evidence.

The genetic influence upon the milk agent is discussed at length. Evidence is presented which suggests that genetic variation is linked with the survival of the milk factor. This factor can be eliminated by selective breeding. There may be considerable variation in the milk agent, which may be the result of variations in the host's genetical constitution.—A. R. JENNINGS.

POISONS AND POISONING

MAJUMDAR, B. N., & RAY, S. N. (1946.). **Fluorine intoxication of cattle in India. II. Effect of fluorosis on mineral metabolism. III. Effect of fluorosis on the composition of blood.**—*Indian J. vet. Sci.* 16. 107–112 & 113–121. [For previous article, see *V. B.* 15. 26.] 395

II. Fluorine in small amount improves Ca and P retention, while large amounts added to a low P ration or to a ration with wide Ca:P ratio, causes rapid onset of fluorosis. Adequate supply of Ca and P gave only temporary relief against high F intake. The amount of F excreted in urine, rather than that retained, was proportional to the intensity of fluorosis in hill bulls. Ingestion of aluminium sulphate prevented the poisoning. The probable mechanism of detoxication of the system against fluorosis is discussed.

III. Several blood constituents in experimental sub-acute fluorosis were studied. A continuous fall in haemoglobin and red cells and in serum phosphatase was most significant.

—N. B. DAS.

SAHASRABUDHE, N. G. (1946.) **Malicious poisoning of cattle by *Calotropis gigantea* [gigantea].**—*Indian vet. J.* 23. 137–140. 396

Four cases are described of malicious poisoning in cattle with *Calotropis gigantea* [giant milk-weed]. Cloth impregnated with the plant juice is introduced into the rectum by means of a pointed stick. If the rectum is perforated and the poisoned cloth is introduced into the peritoneal cavity, cases end fatally with symptoms of peritonitis, otherwise there is severe straining and prolapse of the rectum.—S. P. BERI.

PHARMACOLOGY AND THERAPEUTICS

ROULUMIES, R. (1946.) Über die Wirkung der Metallchloride der zweiten Gruppe des periodischen Systems auf verschiedene Mikroorganismen. [Action of metal chlorides of the second group of the periodic table on various bacteria.]—*Acta path. microbiol. scand.* Suppl. No. 64. pp. 99. [In German: English summary.] 397

K. studied the effect of the metal chlorides of the second group of the periodic table, i.e., BeCl_2 , MgCl_2 , CaCl_2 , SrCl_2 , BaCl_2 , ZnCl_2 , CdCl_2 , and HgCl_2 on 73 different strains of bacteria and ten different strains of fungi. Using aerobic bacteria or tubercle bacilli, germicidal tests were made, the metallic salt being allowed to act directly on the bacterial suspensions, the subculture being prepared on a solid medium. Germistatic tests were made on the 83 strains of micro-organisms when the metallic salts were mixed with the medium and bacteria or fungi were cultivated on it. The results were given as germicidal and germistatic values.

For bacteria, the following toxicity sequence

was characteristic of these metals:—Ca and Mg < Sr < Ba < Be < Zn < Cd < Hg. The rule that the toxicity of the metals rises with the increase of their atomic weight applies for the heavy metals of the second group of the periodic table, but not to the metals of the alkaline earths belonging to this group. Beryllium, the lightest, is in most cases the most toxic. With BeCl_2 the germistatic figures were nearly identical, irrespective of the species of micro-organism and nutritive substance.

The influence of metallic salts on bacteria depends upon the species. Among different strains of the same species K. observed that *Corynebact. hofmannii* is about four times as susceptible to SrCl_2 added to McLeod's medium as is *Corynebact. diphtheriae*. Both the *Vibrio cholerae* strains examined were about six times more resistant to CdCl_2 added to McLeod's medium than the two examined *Bact. coli* strains. Bovine and human types of *M. tuberculosis* were more susceptible to BaCl_2 which was added to

Löwenstein's medium than any other bacteria examined. These strains were not, however, killed within 24 hours by the effect of a concentrated solution of BaCl_2 . Leptospirae were very susceptible to HgCl_2 . Fungi were much more resistant to metallic chlorides than bacteria. Small concentrations of metallic salts stimulated the growth of fungi examined.—E. M. J.

RYCROFT, B. W. (1945.) **Penicillin and the control of deep intra-ocular infection.**—*Brit. J. Ophthal.* 29. 57-87. 398

This is an account of clinical experience and methods of treatment to control deep intra-ocular infection in battle casualties. The importance of early treatment is stressed and also of preliminary surgical treatment where necessary. Penicillin powder should be insufflated at an early stage into all such wounds of the eye. Other forms of treatment which were found of value were sulphonamide administration and protein shock. Clinical experience suggests that penicillin is of value in the prevention rather than in the control of deep ocular infection.—J. M. ROBSON.

WHIFFEN, A. J., & SAVAGE, G. M. (1947.) **The relation of natural variation in *Penicillium notatum* to the yield of penicillin in surface culture.**—*J. Bact.* 53. 231-240. [Authors' summary copied *verbatim*.] 399

A high-yielding strain of *P. notatum* when serially subcultured was found to undergo rapid natural mutation, if sporulation was allowed to occur. Mutants which sporulated heavily and produced low yields of penicillin rapidly outgrew the parent type. This led to a decrease in penicillin productivity which we have called "penicillin run-down". When sporulation was prevented, this run-down did not occur at any time during 50 serial transfer generations.

Continuous selection of highest-yielding clones from a high-yielding strain did not result in the isolation of superior strains. Low-yielding mutants derived from this high-yielding strain were much more stable than the parent. Attempts to build up the penicillin yield of one of these low-yielding mutants by continuous selection were unsuccessful.

DOWNHAM, K. D., & CHRISTIE, G. J. (1946.) **Preliminary report upon the result of the treatment of mastitis in dairy cows with penicillin.**—*Vet. Rec.* 58. 475 and 476. 400

Sixty-four cows with streptococcal mastitis were treated with penicillin by udder infusion. The best results were obtained by giving 30,000 units per quarter in about 100 ml. sterile water on two occasions at an interval of 24 hours. Separate teat siphons were used for each quarter, a metal clip being placed close to the teat siphon

to prevent the back flow of milk. The udder infusion was given after milking and stripping. The solution remained in the udder until the following milking.

75% of the cows were successfully cured as judged by four negative bacteriological tests at weekly intervals. Doses as large as 120,000 units per quarter at 24 hours' interval failed to cure the resistant cases. However, there were indications that success might be achieved with the few difficult cases if the smaller dose were given as before, but for two days, followed by two days' rest, and so on, for three periods.—J. KEPPIE.

DOWNHAM, K. D. (1947.) **Penicillin treatment for mastitis in dairy cows.**—*Vet. Rec.* 59. 368-369. 401

An apparatus is described for udder infusion of penicillin. A feature of the apparatus is a rubber-glass-rubber connexion between the teat siphon and the syringe. This gives a less rigid connexion than when the teat siphon is attached directly to the syringe, and the glass portion allows observation of any back-flow which may take place at the end of infusion; contamination of the syringe can be prevented by pinching the rubber tubing nearest the syringe, thus avoiding the possibility of carrying infection from one quarter to another, a fresh sterile siphon and rubber-glass-rubber connexion being used for each quarter. 80% of *Str. agalactiae* infections have been successfully treated. Mastitis due to *Str. uberis* and *Str. dysgalactiae* may be successfully treated by infusion of 30,000 units of penicillin in 50-100 ml. of distilled water in each quarter of the udder on two successive days with an interval between dosage of 24 hours.—E. COTCHIN.

CASSELBERRY, N. H. (1946.) **Role of penicillin in mastitis control.**—*N. Amer. Vet.* 27. 768-771. 402

It is stressed that the treatment of infected individuals is only one hygienic measure among the many necessary for the control of mastitis in a herd. The Hotis test is recommended as a means of detecting cases of *Str. agalactiae*. These are isolated at the end of the milking line and are given penicillin by intrammary injection when the milk yield is less than four gallons daily. The dosage generally used is 25,000 units in 50 ml. distilled water after each of four successive milkings. Where the daily milk yield is greater than this, 50,000 units in 100 ml. water should be given. For staphylococcus infection the doses of penicillin should be doubled.—J. KEPPIE.

FORGACS, J., & KUCERA, J. L. (1946.) **Studies on streptomycin. III. Microtechniques for assay.**—*J. Lab. clin. Med.* 31. 1355-1363. [For previous parts, see *V. B.* 16. 451.] [Authors' summary copied *verbatim*.] 403

Two methods, the micro and [so-called] microfilm techniques for the quantitative determination of streptomycin and other antibiotics in body fluids are described in detail. Using these methods, 1.5 and 1.0 c.c., respectively, of body fluid are necessary for a standard curve and 0.06 c.c. for a level determination in quintuplet. Venous puncture is necessary only for obtaining blood for a standard curve. A drop of blood obtained from a finger or other convenient extremity is used for blood level determinations.

IVANOV, P. A., POGORELYĬ, A. I., & KOLOMIETS, Y. S. (1944.) Opyt ozdorovleniya zhivotnykh ot gemosporidiozov. [Freeing animals from piroplasmosis.]—*Veterinariya, Moscow*. No. 4. pp. 23–24. 404

Observations were made, in a selected area, on the occurrence of animal piroplasmosis, the seasonal occurrence of various species of ticks, and the relationship between tick distribution, the vegetation of pastures, and wild fauna. An attempt was made to free the stock of the area from piroplasmosis by the use of arsenical washes, and by the use of trypanblue as a prophylactic agent.

As arsenical washes are discontinued in cold weather they do not control piroplasmosis. Mechanical collection of ticks combined with arsenical washing does not reduce the balance of ticks in nature. Trypanblue did not control piroplasmosis but did protect stock. In the equine disease its use led to a sharp fall in cases, but this resulted in the discovery of infectious anaemia, which it appeared had existed in the area in a latent form. In areas where *Ixodes ricinus* occurred, drainage and removal of shrubs eradicated this tick, but it was replaced by *Dermacentor marginatus*.—U. F. RICHARDSON.

YAGER, R. H., & GLEISER, C. A. (1946.) *Trichomonas* and *hemoproteus* infections and the experimental use of DDT in the control of ectoparasites in a flock of Signal Corps pigeons in the territory of Hawaii.—*J. Amer. vet. med. Ass.* 109. 204–207. 405

The authors briefly review the literature on *Trichomonas gallinae* and *Haemoproteus columbae* infection in pigeons. They record the symptoms and lesions in two pigeons with a concomitant infection with these two protozoans. Microscopical examination of material from the pharynx of both birds revealed many active trichomonads. Both lungs in one bird showed multiple necrotic lesions and areas of haemorrhage in which no acid-fast organisms nor trichomonads could be demonstrated.

Stained blood smears from both birds, and

from six other pigeons in the same flock, showed gametocytes of *H. columbae* in a number of erythrocytes; the first time this parasite has been reported in the territory of Hawaii.

The following ecto-parasites were identified as causing medium to heavy infestation:—*Columbicola columbae*, the feather louse; *Pseudolynchia canariensis*, the pigeon fly, incriminated as the intermediate host of *Haemoproteus columbae*; *Falculifer rostratus*, a species of feather mite.

To determine the efficacy of D.D.T. in the control of these ecto-parasites one loft of 26 birds was treated with 10% D.D.T. in talc, at the rate of 3 gms. dusted into each bird. A second loft of 26 birds was treated with a 0.75% sodium fluoride dip, and a third loft of 30 pigeons was left untreated as a control.

Lice and flies were effectively killed by D.D.T., in 24 hours, and a marked reduction in the number of mites was observed after three days. Sodium fluoride killed most lice by the fifth day, while the reduction in the mite population was equivalent to that obtained by the use of D.D.T. The number of pigeon flies in the sodium fluoride treated group was too few to determine whether any control had been affected.—A. E. PIERCE.

TROITSKIĬ, N. V. (1945.) Opyty po primeneniyu serougleroda, khlorpikrina, myla k i drugikh insektitsidov dlya unichtozheniya i otpugivaniya kleshchei Ornithodorus papillipes. [Tests with carbon bisulphide, chlorpicrin, "K" soap, and other insecticides for killing and repelling Ornithodorus papillipes.]—*Med. Parazitol., Moscow*. 14. No. 3. 75–79. 406

T. reports the results of tests carried out under laboratory conditions on the effect of various materials for the killing of argasid ticks. The ticks were placed in the bottom of glass vessels and covered with a 4.5 cm. layer of dust.

Concentrations of at least 100 ml. of chlorpicrin per cu.m. were required in a closed space to kill the ticks in 5–6 hours.

250 ml. of paradichlorbenzene per sq. m. spread on the surface of dust killed all ticks in two and a half days. Poisoning commenced after 2½–3 hours, as evidenced by more rapid movement, and led after a further 1–1½ hours to paralysis. 250 ml. of carbon disulphide per sq. m. killed all ticks in 15 min. in a closed vessel: in an open vessel all ticks were motionless in half an hour. It is suggested that where possible a double treatment be used to disinfect a building from ticks: first, carbon disulphide vapours, which disperse readily, to disinfect the building rapidly and second, paradichlorbenzene, which is non-poisonous to human beings, to keep the building from reinfestation.

Tests were made on repellents by two

methods :— In the first, hungry ticks were placed on the skin of a g. pig in the immediate neighbourhood of a cloth treated with the test material. Of the materials tested one spoken of as NCI gave the best results, dispersing 70% of the ticks. With paradichlorbenzene and menthol, 60–70% of the ticks remained, whilst with “K” soap and a tar preparation only one to two ticks moved away. In the second test, two g. pigs were placed in a box, separated from each other by 35–40 cm. and dressed in special overalls. The overall of one g. pig was treated with the above materials. Ticks were placed between the animals and a check was made of the numbers which attached to the g. pigs and the relative percentages attached to each. Examination ten days after treatment showed that not only had the repellent action of the treated overalls disappeared, but that they even appeared to attract the ticks.—S. W. SALTER.

RAGHAVACHARI, K., SHAH, A. A., & RAY, H. N. (1945.) **Control of acute theileriasis in calves in the Punjab.**—*Indian J. vet. Sci.* 15. 149–151. 407

Severe acute *T. annulata* infection in calves under three months of age is recorded. Susceptibility was great and mortality ranged from 13–23% between 1936 and 1939. *Hyalomma aegyptium* was the vector. To control the disease, the calves were weaned at birth and kept in tick-proof paddocks for at least three months, tick-dip being used both for the young calves and their mothers.—H. SINGH.

DESCHIEENS, R. (1944.) L'action anthelminthique des colorants triphénylméthaniques. [**Anthelmintic action of triphenylmethane derivatives.**]—*Bull. Soc. Path. exot.* 37. 111–125. 408

The anthelmintic effects of certain dye derivatives of triphenylmethane on mam-

malian cestodes and nematodes are described.

Tests *in vitro* were carried out using: *Rhabditis macrocerca*, *Haemonchus contortus* larvae, *Scyphacia obvelata*, *Aspicularis tetraptera*, and *Hymenolepis nana* (var. *fraterna*).

It appeared that the triamines (such as fuchsine and methyl violet) were more active than the diamines (malachite green, methyl green and brilliant green). Sulphonation reduces or suppresses the anthelmintic properties of compounds as for example when basic is changed to acid fuchsine. The anthelmintic effect is increased *in vitro* above pH5 which is in the neighbourhood of the isoelectric point of proteins.

The action of these dye derivatives is by ingestion in the case of nematodes and by absorption in the case of cestodes. The relatively greater toxicity for invertebrates, particularly helminths as compared with mammals, including man, is advantageous to their use. Chemotherapeutic coefficients (the ratio of curative dose to toxic dose) are given for basic fuchsine, methyl violet, and the sulphate of malachite green which are regarded as particularly useful. Basic fuchsine is described as successful in treating a few cases of *Dipylidium caninum* and *Toxacara canis* infestation. More difficulty was found with ruminants infested with *Bunostomum* and *H. contortus*, this being ascribed, at least in part, to the greater relative size of the ruminant gut.—S. BRIAN KENDALL.

HOEKSTRA, J. (1947.) Een nieuw desinfectiemiddel bij de melkwinning. [**A new disinfectant (“Halamid”) in the milk industry.**]—*Tijdschr. Diergeneesk.* 72. 355–365. 409

An account of a proprietary chloramine product, “halamid”. It had about three times the disinfectant power of phenol and is advocated by H. for dairy disinfection.

See also absts. 246 (anthrax); 296 (phenanthridinium); 303 (sulphonamides in coccidiosis).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

—, (1946.) **Milk and dairies, England. Statutory Rules and Orders 1946, No. 10.** pp. 4. London: H.M. Stat. Off. 1d. 410

This is an Order made by the Ministry of Health amending the Third Schedule of the Milk (Special Designations) Order of 1936 in so far as pasteurized milk is concerned. The new Order defines tests for tuberculin-tested milk (pasteurized) and for pasteurized milk. “If the milk is pasteurized, any sample taken after pasteurization and before delivery to the consumer shall satisfy a phosphatase test and a methylene blue test.” The Order goes on to lay down detailed instructions for carrying out both the phosphatase test and the methylene blue test in order to secure

uniformity of procedure amongst the various local authorities concerned.

The Amending Order adds a Part IV and Part V to the third schedule of the principal Order, for the phosphatase and the methylene blue tests, respectively.—D. S. RABAGLIATI.

STUURMAN, S. (1946.) Een kwart-eeuw melkhygiëne. [**A quarter of a century of milk hygiene.**]—*Tijdschr. Diergeneesk.* 71. 933–937. 411

In the Netherlands the connexion between *Br. abortus* and previously inexplicable cases of sickness in man will always be associated with the name of J. van der Hoeden. The work of van

Oijen to ensure a supply of high quality milk resulted in the establishment of the Milk Control Station of the V.V.Z.M. (Association of the Dairying Industry and Milk Hygiene) at the Hague. This was followed in 1925-26 by the setting up of milk control stations in Amsterdam and Utrecht. In 1928 the V.V.Z.M. proceeded to the establishment of a public health service for cattle in S. Holland, Friesland and Groningen. In 1933 the so-called "Consumer Milk Department" was created by the Government and payment for milk according to quality followed immediately.

The good results to be obtained by combining the departments of health and milk hygiene in one institute, as is done in Friesland, are emphasized. The creation of a satisfactory system for quality tests is a desideratum.

Reference is made to the work of Lazarus, Henneberg, Clarenburg, Majoweki, Treffers and Stenhouse-Williams. In the last 25 years this journal has published more articles and reviews dealing with milk investigation, milk hygiene and milk supply than in any preceding quarter of a century.—R. PETER JONES.

PULLINGER, E. J. (1946.) **A preliminary report on the grading of pasteurized milk.**—*J. S. Afr. vet. med. Ass.* 17. 113-139. 412

The objects of this study were (1) to ascertain the extent to which the bacterial quality of commercially pasteurized milk depended upon the quality of the incoming milk, (2) to study the Breed count and the methylene-blue reductase test, as regards the grading of pasteurized milk, (3) to show the extent to which milk can be recontaminated during and after processing and the value of a presumptive coliform test as an index of the hygiene of the dairy and (4) to suggest ways and means of grading pasteurized milk.

It was found that there is a definite relationship between the quality of raw milk and the same milk when pasteurized; this, however, is not usually recognized by the public, who think that any semi-sour milk is suitable for pasteurization. When parallel Breed and reductase tests were made, no correlation between them was found.

It is concluded that raw milk to be used for pasteurizing must be of high grade as to hygiene and pasteurized milk should be kept in sealed containers filled automatically and continuously stored under refrigeration conditions. It should be bottled at the depot and not supplied in bulk, as it cannot then be expected to conform to standard. The grading of pasteurized milk can only be done after it has reached the depot and must be based on the correlated results of all samples. The testing of isolated samples is useless.—D. S. RABAGLIATI.

VAN SANTEN, R. (1946.) De ontwikkeling der vleeschkeuring in ons land in de laatste 25 jaar. [Meat inspection in Holland during the last 25 years.]—*Tijdschr. Diergeneesk.* 71. 930-933. 413

Long before the Meat Inspection Law of 1919 came into force there already existed in the Netherlands the Association of Directors of Municipal Abattoirs. The Inspection Regulations published in 1920 as a Government decree indicating the procedure to be followed in inspection were adapted to modern views and were of great importance to the country.

The period 1920 to 1935 is outstanding as the most productive time for scientific meat inspection. The names of the contributors to the literature of this investigation are reviewed. Nearly all these investigations were carried out in the laboratories of the Public Abattoirs under the supervision of the Veterinary Faculty.—R. P. J.

BLOOD, B. D. (1947.) **Veterinary sanitary problems of air transport.**—*J. Amer. vet. med. Ass.* 110. 1-8. 414

This is a general discussion of the greater vigilance on the part of quarantine officials which is necessitated by the increasing development of air transport of livestock and livestock products. Examples are given and illustrated by photographs. During the war 188 dogs, three cats, one coyote and one donkey are known to have been landed in Great Britain by aircraft and 96% were subsequently rounded up by the veterinary officials. Many thousand horses and mules were transported by air into Burma and China. Cattle have been transported by air from New Jersey, U.S.A. to Bogota, Colombia and large numbers of day-old chicks are conveyed in this way. The danger of introduction of disease-transmitting insects and rodents by aircraft is dealt with. It is stated that U.S.A. regulations have been revised since July, 1946, and dogs, cats and monkeys imported into America [presumably from rabies infected countries] are now required to have been vaccinated against rabies [the wisdom of such a procedure is doubtful on account of the possible danger of masking symptoms and so making recognition of the disease more difficult.]—M. C.

WEST, R. L. (1947.) **The application of sanitary science in the control of diseases of domestic animals.**—*J. Amer. vet. med. Ass.* 110. 71-76. 415

In this short paper the basic principles of prevention of infectious disease are discussed and their importance emphasized. Certification, quarantine, slaughter of infected and contact animals, disinfection and artificial immunization are the main weapons.

Discussing the regulations governing interstate movements of livestock in the U.S.A. it is stated that the efficacy of the regulations is reduced because the Post Office Dept. is exempted from obligations which apply to all other common carriers of livestock. This W. considers to be a serious defect in the measures designed to control the spread of Newcastle disease in the U.S.A.

It is emphasized that immunization alone is not a dependable method of controlling, much less of eradicating, infection.—M. C.

WYNNE, R. L. (1947.) **A simple formula for the calculation of atmospheric dryness.**—*Brit. med. J.* April 19th. 528-529. 416

W. reports a fatal case of heatstroke in a patient undergoing an operation in an emergency underground theatre, and indicates the need for wet and dry bulb thermometers in all operating theatres to indicate the drying capacity of the air. Values for the partial pressure of water vapour

under saturation conditions at various temperatures are available in standard tables, and between 30° and 90° F. the relative curve is very nearly parabolic, whilst the actual pressure of the water vapour in an atmosphere is readily calculated from an empirical formula involving wet and dry bulb thermometer readings. From these two relationships, W. deduces an expression for the drying capacity of air or its "saturation deficiency" as being very nearly equal to

$$\frac{D^2 - W^2}{100} \text{ or } \frac{(D - W)(D + W)}{100}$$

where D = Fahrenheit temperature of the dry bulb and W that of the wet. From this simple formula an assessment of the states of atmospheric dryness can readily and rapidly be worked out without recourse to tables. The suggestion is made that the atmosphere of operating theatres should be more rigorously investigated and controlled.—A. EDEN.

See also absts. 249 (TB. control in Denmark); 258 (TB. control in Switzerland); 285 (*Brucella melitensis* in cow milk).

LIVESTOCK HYGIENE

— (1946.) **"1080" rodenticide to be sold only to pest control operators.**—*Pests.* 14. No. 1. 28. 417

One-fiftieth of an ounce of this new rodenticide is believed to be a lethal dose for humans, and at this time there is no known antidote. Tests

See also absts. 409 (a disinfectant for dairy use); 411 (milk hygiene).

in Manila with "1080" were entirely successful in bringing the rat population under control. Dogs and pigs which presumably fed on rat carcasses were also killed. It is claimed that rats cannot detect its presence in poisoned food.—L. D.

ZOOTECCHNY

CARNAT, G. (1945.) **Statique et mécanique dans l'appréciation du cheval. [Static and mechanical tests for judging horses.]**—*Schweiz. Arch. Tierheilk.* 87. 527-546. [In French.] 418

Of recent years, the "working" horse has risen to a rank of greater importance than the race horse, and has thus created a demand for a simple test by which it can be valued; a test as simple as the race course and show ring. Many attempts to devise such tests have been made, varying from simple weight lifting to "dynamometric" carriages, but all these, while measuring more or less accurately the actual effort, give no record of the fatigue sustained. This fatigue can be estimated by physiological examinations made immediately after the test, i.e., pulse, respiration and urine analysis, but the amount of fatigue that can be sustained without appreciable loss of working power varies widely in different breeds and in different individuals of the same breed. It is largely a question of nerves and can be greatly reduced by training or educating the reflexes to the work. Studies to date indicate that good health and suitable conformation are the most

important factors, and, when these are equal, lighter horses generally exert relatively greater tractive power than heavier ones.—R. MACGREGOR.

— (1946.) **Identification of pigs.**—*Qd agric. J.* 62. 160-173. 419

In Queensland the law compels the proper identification of all pigs for sale or disposal. The marking systems in regular use are firebranding, body tattooing, ear-marking with notches, ear-tagging, ear tattooing, and the temporary methods of paint marking, and hair clip marking. The applications and merits of each system are discussed.—D. A. TITCHEN.

DUCKWORTH, J., & RATTRAY, G. B. (1946.) **Studies of diurnal variation in the body temperature of the tropical threequarter bred (Holstein-Zebu) dairy calf.**—*Trop. Agriculture, Trin.* 23. 94-100. 420

Studies made on the diurnal rhythm of the rectal temperatures of three-quarter Friesian-Zebu cattle under tropical conditions showed that two maxima occurred, one at about noon and the other at 6 p.m. These maxima and their times

of occurrence appeared to be unrelated to the systems of feeding and management adopted, and the experiments suggest that little advantage is to be gained from housing the animals in open sheds during the day compared with the alternative provision of shaded paddocks. The authors discuss the whole question of thermo regulation and dissipation of body heat in cattle under tropical conditions and the reader is referred to the original for the more detailed aspects of this discussion.—A. EDEN.

See also absts. 297 (psychology and trypanosomiasis); 378 (selection of foods by animals).

TECHNIQUE AND APPARATUS

KIRK, W. H., KNIGHT, G. C., & MUIR, W. R. (1947.) **Radiography. Discussion by the Central Veterinary Society.**—*Vet. Rec.* 59. 277–280. 422

KIRK confined his remarks to the use of the portable X-ray set. His original Philips' Metalix type had proved successful for all parts of the dog, and the limbs of horses and cattle from the foot to the stifle and elbow. More recently he had acquired a portable Watson type M X 2. This proved satisfactory particularly for large animals and for the production of good radiographs of dense joints such as the stifle and elbow of the horse. The perfect instrument for both small and large animals had not yet, however, been produced. K. gave useful advice on the use of a portable apparatus on the farm. He stressed the difficulties of "screening" animals: the danger to the instrument and to the operator and the less satisfactory result since no permanent record was obtained.

KNIGHT described, illustrated with lantern slides, radiographs of some unusual bone conditions in small animals. The first condition described, a diffuse and practically painless swelling of one or both rami of the mandible with a little softening of the jaw, had been noted in five bitches, all Scottish terriers and was apparently associated with a mineral deficiency. It had been called leontiasis ossea by comparison with a condition in man.

Osteo-chondritis of the hip joint of the dog, sometimes called "von Perthe's" disease, was an aseptic necrosis and deformity of the proximal femoral epiphysis. Experience showed that the lameness produced might not persist. The onset was usually at about six months and the smaller breeds were most susceptible.

Knight showed two films of a condition which he described as myositis ossificans and an actual case was demonstrated. Heterotropic bone was deposited in a crescentic shape adjoining the tuber ischii.

WAGENAAR, G. (1946.) De drachtigheidsdiagnose bij de merrie door middle van rectaal onderzoek. Klinische les. [**Pregnancy diagnosis in the mare by rectal examination.**]—*Tijdschr. Diergeneesk.* 71. 576–580. [English and French summaries.] 421

A general account containing nothing new. The Arshheim-Zondek and Cuboni tests are also referred to. W. claims 100% efficiency for the rectal method, the diagnosis being possible at eight weeks after service.—J. E.

Two films of ankylosing spondylitis were demonstrated. The condition is not uncommon in old dogs.

MUIR explained that leontiasis was due to an inadequate intake of calcium associated in time with the development of the sex glands. The sex hormones, particularly oestrogens, were known to influence calcium metabolism and to accelerate either the mobilization or the deposition of calcium in the bones. A dietary level of calcium which was just sufficient to prevent clinical signs of skeletal disorder in the immature growing animal may be inadequate at the time of sexual development and under these conditions lesions confined to the jaw-bone may be due to its extremely active mineral metabolism. Addition of bone meal to the diet of affected dogs induced recovery.

—S. BRIAN KENDALL.

SILVERMAN, L. (1946.) **Respiratory air flow characteristics and their relation to certain lung conditions occurring in industry.**—*J. industr. Hyg.* 28. 183. [Abst. in *Amer. Rev. Tuberc.* 55. No. 6. p. 173 of absts. (1947), signed: H. R. NAYER. Amended.] 423

The author has devised an instrument for measuring the instantaneous rate of air-flow during both phases of respiration. The instrument consists of a fine platinum wire suspended across the diameter of a tube. This wire is pivoted at one end and connected to a half-turn spring at the other. The wire is mounted in channels and, as air flows through the tube, the wire deflects in direct proportion to the rate of air-flow; this deflection is photographed on a moving film giving the air-flow curve or pneumotachogram. A portable instrument, operating upon a somewhat different principle, has been recently devised. Twenty-nine normal male subjects were tested with this portable instrument; similar curves were obtained in most of these patients. The curves obtained in bronchial asthma are diagnostic: the curves show marked damping especially in the expiratory phase; there is also a sharp return to

zero at the end of expiration, a result produced in normal subjects by the application of external resistance. The results recorded for patients with different pulmonary conditions are discussed.

DUSSERT, E. (1945.) Las reacciones de aglutinación aplicadas al diagnóstico clínico de las enfermedades infecciosas. [The agglutination test in the diagnosis of infectious diseases.]—*Bol. Inst. bact. Chile.* 2. 173-194. 424

This is a general discussion, with no new knowledge.—I. W. JENNINGS.

VOGEL, J., & GOMES, A. (1944.) Em torno da deferentomia no cão. [Ligation of the vas deferens in the dog.]—*Bol. Soc. brasil. Med. vet.* 13. 229-241. [English summary.] 425

The authors discuss the objects of vasectomy and describe the development and anatomy of the parts concerned and the operation, which they advocate as being less painful than other methods of castration and leaving the hormonal balance of the animal undisturbed. In addition, older animals are said to become rejuvenated.—I. W. J.

GREEN, J. B. M., & PENFOLD, J. B. (1947.) Clinical thermometers as a possible source of cross-infection in hospital.—*Lancet.* 253. 89-90. 426

The usual routine of recording temperatures in hospital wards is criticized as liable to induce the spread of disease from one patient to another.

The most usual thermometer disinfectant, glycerinum thymolis compositum is quite inefficient and the passage of the thermometer from one patient to another is commonly so rapid that no non-irritant disinfectant would be likely to produce sterilization.

The results of culturing samples from

thermometer jars in a hospital ward are described.

It is suggested that if ward temperatures are to be taken by the mouth each patient must have an individual thermometer.—S. B. K.

ROTHCHILD, I. (1947.) The artificial anus in the bird.—*Poult. Sci.* 26. 157-162. 427

R. describes an operation whereby the distal end of the rectum is brought through the body wall and thus serves as an anal opening. The cloaca serves as an urinary bladder and is still able to resorb water. Thus separate urine and faeces samples can be collected from the same animal. There are some excellent photographs illustrating various stages of the operation. A suitable harness for collecting samples of urine and faeces is also described.—D. LUKE.

RICHTER, C. P., & EMLER, J. T., Jr. (1945.) A modified rabbit box trap for use in catching live wild rats for laboratory and field studies.—*Publ. Hlth Rep., Wash.* 60. 1303-1308. 428

A modified rabbit box-trap, used successfully around infested buildings in the U.S.A. to catch large numbers of live wild rats for laboratory experiments, is described and figured. A wire hook attached to a trigger and trap-door is baited with a piece of bread or apple, and the floor of the trap covered with a grain mixture impregnated with molasses. Several rats were frequently caught together in this trap. Presumably the rats entered primarily to eat the grain mixture on the floor and only accidentally discovered the bait on the hook. The efficacy of the trap is attributed partly to its construction of undressed timber and consequent absence of shiny parts. A collection box used for emptying this trap and transporting the rats caught, is also described.—L. DAVIES.

MISCELLANEOUS

UNGER, J. (1945.) Rattenbisse bei Schweinen. [Rat-bite in pigs.]—*Schweiz. Arch. Tierheilk.* 87. 437. 429

Some young pigs were kept in pens constructed in old converted agricultural premises near the mouth of a railway tunnel on the line to Alsace. Near the pigs were some barns in which crates of salvaged biscuits were stored. Brown rats began raiding the stores, apparently from the railway tunnel and cutting, so the biscuits were moved into the farmhouse for safety. Deprived of this source of food, the rats started attacking the young pigs at night, inflicting serious wounds of the ears, tail, feet and hind limbs, and sometimes causing fatal haemorrhage. It is thought that these rats were most probably musk rats, *Fiber zibethicus*, which are believed to have spread into Switzerland from Alsace.—E. COTCHIN.

I. —. (1940.) Notulen van de 89ste algemeene vergadering van de maatschappij voor diergeneeskunde, gehouden op Vrijdag 18 en Zaterdag 19 October 1940 in het jaarbeursgebouw te Utrecht. [Report of the Scientific Section 19 October 1940 (Dutch Veterinary Society).]—*Tijdschr. Diergeneesk.* 67. 1032-1052. 430

II. —. (1941.) Notulen van de 90ste algemeene vergadering van de maatschappij voor diergeneeskunde, gehouden op Vrijdag 17 en Zaterdag 18 October 1941 in het jaarbeursgebouw te Utrecht. [Minutes of meeting of the Scientific Section 18 October 1941 (Dutch Veterinary Society).]—*Ibid.* 68. 993-1003. 431

I. BERGER reported that a planned alteration in the law on the practice of veterinary surgery of 8 July, 1874, Statute-book 98, was in

course of preparation, in which the requisite attention would be paid to the control of unqualified practitioners.

An address was delivered by VAN OIJEN dealing with bacteriological examination of slaughter animals. This was followed by an address by TEN THIJE entitled "A few remarks on the examination of the digestive apparatus". Afterwards a sound film on the control of sterility in horses and cattle was shown.

II. BERGER reported the name veterinary surgeon (dierenarts) was now official. Two projects were engaging the attention of the Department of Social Services: a regulation concerning animal protection, and a law on incinerators. There was a plan to unite tuberculosis control to the animal health service. Finally, it was probable that a bill would be drafted making warble-fly and bot fly control compulsory.

F. C. VAN DER KAAJ delivered a lecture on "Functional investigation of corpora lutea, especi-

ally in cattle". An address by S. STUURMAN followed entitled "Milk hygiene in the West of the country", and one by BEIJERS on "Some experiences regarding affection of the respiratory organs in horses in the past winter". The German film on the control of foot and mouth disease was shown. BEIJERS then delivered an address on "Oesophagus obstruction in the horse".—R. PETER JONES.

EGGERT, R. (1946.) **The construction and installation of thermocouples for biological research.**—*J. agric. Res.* 72. 341-355. 432

The construction, principle, and calibration of thermocouples are described, together with their installation and their advantages over other methods used to determine temperature changes in biological material. An account is given of the use of the potentiometer-thermocouple method for measuring the internal temperature of tree-trunks.—MARY C. LOBBAN.

REPORTS

AUSTRALIA, NEW SOUTH WALES. (1945.) **Live-stock Disease Report, 1944-45, Department of Agriculture, Division of Animal Industry.** [HENRY, M.]—pp. 7. Sydney. [fcp.] Mimeographed. 433

Additional facilities have been developed at the Glenfield Veterinary Research Station, at the branch laboratory at Wollongbar Experiment Farm, at Trangie Experiment Farm and at the Seven Hills Poultry Experiment Farm.

Results of the Glenfield Research Station showed that the virus of swine fever remained viable in frozen pork for over 500 days. LISTERIASIS was recorded in N.S.W. for the first time, causing abortion in sheep.

N-butyl chloride showed promise as an anthelmintic against *Ascaris lumbricoides* in pigs. Chickens consumed sulphur at the level of 5% in the food without serious harm, but growth was retarded. Other investigations given brief mention are BRUCELLOSIS in cattle and pigs, MASTITIS in cattle, sheep blowfly (progeny testing to develop sheep with plain breeches), TOXAEMIC JAUNDICE of sheep, nutritional studies with sheep in the field, survey of and epidemiological studies on worm parasites of cattle, COCCIDIOSIS in chickens.

Eight outbreaks of BOVINE CONTAGIOUS PLEURO-PNEUMONIA occurred in districts into which Queensland cattle were introduced, involving 3,220 cattle, with 47 recorded deaths.

Ten outbreaks of ANTHRAX occurred, involving 210 cattle, 38 pigs and 12,678 sheep, with 9, 13 and 88 deaths respectively.

In 30,136 tuberculin tests there were 311 reactions, i.e. 1.03% cattle supplying milk to Sydney and Newcastle continued under test.

A few cattle ticks were found in a region which had been freed in an eradication campaign in 1933. The origin of the ticks was not discovered. Damage to boundary fences by flooding and subsequent entry of infested cattle occurred in the Richmond and Clarence valleys, thereby retarding the eradication campaign which was in progress. The incidence of tick fever was low.

Stickfast Flea, *Echidnophaga gallinacea*, has spread from Broken Hill to Wilcannia and Wentworth. A few outbreaks of infestation by the itch mite of sheep, *Psorergates ovis*, were recorded.

The report contains details of animals quarantined, animals entering and leaving N.S.W., livestock statistics and number of properties quarantined for sheep ked and lice infestations.

—H. McL. GORDON.

AUSTRALIA, NEW SOUTH WALES. (1946.) **Live-stock Disease Report. 1945-46, Department of Agriculture, Division of Animal Industry.** [HENRY, M.]—pp. 12. Sydney. Mimeographed. 434

The investigations of the Glenfield Veterinary Research Station, comprised artificial insemination, BRUCELLOSIS in pigs, BOVINE MASTITIS, mortality in cattle, and poultry diseases.

A cattle unit has been in operation for a year and 340 cows have been inseminated. It was found that semen quality deteriorated in

the absence of suitable green feed for bulls.

Insemination has been used in genetic work with sheep, chiefly in developing a line of plain-breeched animals. The agglutination test for BRUCELLOSIS in pigs is valuable mainly as a means of detecting the disease in a herd, but is unreliable for diagnosing the disease in an individual pig. Intramammary injections of sulphanilamide in oil in BOVINE MASTITIS although only 70% effective in removing infection from the udder proved of considerable economic value in improving the milk quality. Deaths of young cattle in the Tamworth district were associated with a coliform septicaemia, but it is thought that predisposing factors were concerned. Studies of poultry diseases included red cell agglutination by vaccinia virus (positively reacting birds were bred to determine the possible hereditary nature of the ability to agglutinate), demonstration of *H. gallinarum* in FOWL CORYZA, agglutination test to detect carriers of FOWL CHOLERA, vaccination against SPIROCHAETOSIS and treatment of this disease with organic arsenicals. The following nutritional studies were begun:—Raising calves on buttermilk and dry foods, feeding seaweed to sheep and pigs, use of urea for ruminants. A whole wheat diet greatly depressed hatchability of eggs, owing to deficiencies of manganese and riboflavine. Chickens showed little difference in growth when fed either wet mash and grain, dry mash and grain, or all mash. Studies of parasites of stock included anthelmintics for pigs (sodium fluoride and n-butyl chloride), methods of faecal examination for cattle, use of sulphamerazine for treatment of COCCIDIOSIS of chickens. Details are given of the material examined for the years from 1943 to 1946. There were 22 outbreaks of BOVINE CONTAGIOUS PLEURO-PNEUMONIA involving 10,007 cattle, with 486 deaths. The complement fixation test continued to give valuable assistance in dealing with outbreaks. Vaccination of cattle in Queensland appears to have reduced the incidence of the disease in cattle moving into N.S.W.

There were a few outbreaks of ANTHRAX in the districts usually affected, and deaths occurred among cattle, sheep, horses and pigs. AVIAN TB. has spread from Victoria into southern N.S.W. but as yet has not appeared in the intensive poultry raising area near Sydney and Newcastle. An outbreak is recorded on the Clarence River in the north coastal region of N.S.W. Tuberculin testing of cows supplying milk to Sydney and Newcastle has been continued. There were 224 reactors in 23,289 cattle tested. A case of JOHNE'S DISEASE in a bull imported from Great Britain some years ago led to fairly extensive testing of contact cattle and three cases were found among 686 animals. The disease does not seem to have

found a favourable environment in Australia. Contagious PUSTULAR DERMATITIS of sheep was found to be transmissible to man, and in order to avoid interference with shearing of affected sheep by shearers refusing to handle them, extensive vaccination has been carried out.

The use of Strain 19 vaccine for BRUCELLOSIS in cattle is being encouraged.

Some 635 sheep properties, carrying 992,492 sheep, were quarantined following the detection of lice and ked infested animals. The cattle tick eradication scheme has proceeded satisfactorily. During the year 3,198,266 head of stock were dipped. Compensation claims showed that there was a loss of one animal of every 4,550 dipped. A severe cyclone caused damage to boundary fences and resulted in reinfestation of some country. There are details of live stock statistics, border crossings of stock and imports and exports of animals from the state.

—H. McL. GORDON.

LIGHTFOOT, G. (1945.) **C.S.I.R.—1945.** pp. 98. Australia: Council for Scientific and Industrial Research. 4to. 435

This publication reviews the research activities of the Council since its beginning almost 20 years ago. The Council now consists of 14 divisions, including Plant Industry, Economic Entomology, Animal Health and Production, Biochemistry and General Nutrition. A map and table show the locations of these divisions and their associated laboratories and field stations.

The first established divisions were concerned chiefly with the primary industries. The secondary industries soon claimed research assistance and the relevant divisions developed greatly during the war years. A section of Mathematical Statistics serves all divisions by having officers located at the chief laboratories. The latest establishment in the C.S.I.R. is a Scientific Liaison and Information Bureau with headquarters in Melbourne and Scientific Research Liaison Offices in London and Washington.

The principal activities of the divisions are discussed. The scope of the primary industries divisions may be indicated briefly. The Division of Plant Industry has engaged in a wide field of work including vegetables and drug plants (atropine and hyoscyne), plant and fruit diseases, the special problems of Northern Australia, irrigated pastures and tobacco.

The Division of Economic Entomology has also covered a wide field including sheep blowfly (the disease produced costs Australia as much as £4,000,000 annually), cattle tick, buffalo fly, locusts, termites, wheat pests, wool pests and biological control.

The Division of Animal Health as originally

constituted included Nutrition, but this has latterly become a separate division. Animal health problems include BOVINE PLEURO-PNEUMONIA, cattle TICK FEVER, MASTITIS, PEG-LEG DISEASE of cattle, footrot of sheep, internal parasites of sheep, certain aspects of the sheep blowfly work (including the development of the Mules operation as a preventive measure) and other sheep diseases (caseous LYMPHADENITIS, BLACK DISEASE, ENTEROTOXAEMIA). The use of Zebu cattle for cross-breeding in tropical regions has been investigated.

The Division of Biochemistry and General Nutrition has investigated problems of nutrition and wool production, coast disease (associated with deficiencies of copper and cobalt), mineral deficiencies generally, food requirements of sheep (including drought feeding), and pasture management.

The Division of Soils has engaged in soil surveys of a number of regions in Australia, notably in irrigation areas, and many soil maps have been prepared. Mineral deficiencies have received considerable attention in the laboratory and in the field. The work of the field stations dealing with irrigation problems is given special mention.

The Division of Food Preservation and Transport deals with the problems associated with the handling, storage, preservation and transport of food, with special reference to export products such as meat, fruit, eggs and fish.

A section of Dairy Research, housed with the Division of Industrial Chemistry in Melbourne, is engaged in studies on dairy products.

—H. MCL. GORDON.

GREAT BRITAIN. (1945.) London School of Hygiene and Tropical Medicine (University of London) Incorporating the Ross Institute. Report on the work of the school for the year 1944-45. pp. 44. London: The School. [8vo]. 436

Among the items of comparative interest contained in the report of the school is the mode of action of insecticides used in sheep dips against the tick *Ixodes*. It is shown that as a general principle the insecticide will enter the insect most readily from a solvent in which it is less soluble.

Catalogues have been compiled of the parasites of domestic animals and notes made of their distribution throughout the Empire.

Recent modifications in the technique used for identification of Trichostrongylid worms has made it necessary to correct certain inaccuracies in the descriptions of a number of species particularly with regard to the spicules of Trichostrongylus species.—D. D. OGILVIE.

GREAT BRITAIN. (1946.) The Lister Institute of

Preventive Medicine. Report of the Governing Body, 1946. pp. 15. London: The Institute. [4to.] 437

The following items are of interest to the veterinarian.

Work on TRICHOMONIASIS in cattle has been continued. An investigation has been made of the passive transfer of immune body from the mother to the newly-born calf by ingestion of colostrum. Sensitization of the skin of the calf by this means has been demonstrated. It has been found that parenterally vaccinated animals with circulating antibody and positive skin reactions are still susceptible to the disease. In addition to desensitization by injection of antigen or by absorption of antigen from a trichomonous pyometra it has been found that desensitization of the skin occurs at the time of calving.—D. D. O.

GREAT BRITAIN. (1947.) The Lister Institute of Preventive Medicine. Report of the Governing Body, 1947. pp. 12. London: The Institute. 438

After a general report of the work of the governing body, the work of the Institute is summarized under the following headings:—bacteriological, immunological and pathological studies, bio-chemical studies, biophysical and physico-chemical studies, nutritional studies, nicotinamide and related compounds, and the work of the Medical Research Council's external scientific staff. The report ends with a list of the scientific papers published during the year. The investigation of the greatest veterinary interest is the study of TRICHOMONIASIS in cattle continued by Robertson in collaboration with Kerr (Veterinary Research Dept., Ministry of Northern Ireland). Animals which had had infections of varying severity were re-infected. Results show that sub-clinical infections convey no immunity, acute infections convey some immunity for a short period. Studies in sensitization and de-sensitization have been continued. Methods for bulk production of *Tr. foetus* have been evolved.

—D. S. RABAGLIATI.

GREAT BRITAIN. (1945.) Northern Counties Animal Diseases Research Fund, Memorial to Alan, 8th Duke of Northumberland. Eleventh report of the trustees on research work into sheep and lamb diseases. [STEWART, W. L.]—pp. 37. Newcastle upon Tyne: King's College. 439

Emphasis is laid upon results obtained in field trials of phenothiazine and minerals in sheep. An investigation of so-called "pinning" in sheep revealed the possibility that Johne's disease (ovine) might well be responsible for the unthriftiness.

—G. B. S. HEATH.

TANGANYIKA TERRITORY. (1947.) **Annual report of the Department of Veterinary Science and Animal Husbandry for the year 1945.** [LOWE, H. J.] pp. 41. Dar es Salaam : Govt. Printer. Shs. 4/-.

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This report is divided into seven parts. In addition 19 pages are devoted to "Notes on the history, incidence and measures taken to deal with outbreaks of BOVINE CONTAGIOUS PLEURO-PNEUMONIA during the years 1937-1945, in the Musoma District, Tanganyika Territory".

In spite of the serious shortage of veterinary officers, three of whom on the average deal with a cattle population of a million head (plus a similar number of sheep and goats), much progress has been made. On the financial side £63,000 was returned to Government out of an appropriation of £87,000, these figures do not include non-revenue earning colonial development and welfare funds, nor revenue to native treasuries (£27,000) nor cattle cess, which in one province alone amounted to £10,000.

Efforts to prevent RINDERPEST from spreading southwards into Southern Africa were successful, though anxiety arose from an outbreak at Tabora which was finally suppressed in 1945. This outbreak was of so mild a nature as to cause alarm lest it spread undetected, and subsequently regain virulence to the south. It is particularly interesting to note that an outbreak of RINDERPEST in the Tanga Province broke down the immunity engendered by Kenya attenuated goat virus and infected such relatively immune species of game as oryx, impala, water-buck and Grant's gazelle. Neither gerunuk nor dik-dik were infected. On the whole the immunity obtained from K.A.G. was good, but, as was expected, trouble was experienced in immunizing calves with this agent. Calves were laboriously immunized with three weekly injections of glycerinized or formalized vaccine.

The methods by which BOVINE PLEURO-PNEUMONIA was prevented from assuming enzootic proportions throughout Tanganyika and how it was eventually completely suppressed in Musoma (1947) are described. The work involved, between 1937 and 1945, the giving of some 1,420,000 tail inoculations. A most comprehensive description is given of the preparations for a campaign and its organization, the equipment and method of work, the control of quarantines and an account of the various vaccines which were used. The report contains a series of excellent maps, a chart illustrating the mortality rate from bovine pleuro-pneumonia and its control by vaccination and a useful diagram of a cattle crush such as was used during the inoculation.

The conclusions reached were :-

(1) BOVINE PLEURO-PNEUMONIA can be, in Africa, a rapidly spreading disease.

(2) It should be dealt with firstly by immunizing wide belts of cattle in and around the quarantine areas.

(3) Mass inoculation methods if properly applied will eradicate the disease within a comparatively short period.

(4) It does not appear necessary to carry out routine triple-inoculation provided that the period of immunity conferred by a single inoculation is known and that reinoculation takes place within that period.

(5) If the foregoing measures are carried out a stage is reached where it is practicable to stamp out the disease by slaughter in the few remaining centres of infection.

Mention is made of the success which attended the hand-dressing of cattle as a preventative against EAST COAST FEVER, some 300,000 head of cattle were so treated.

The Department investigated TRYPANOSOMIASIS in Zanzibar, the nature of the vector of which had puzzled observers for many years ; it had been thought to be mechanically transmitted. *Glossina austeni* was found to be common on the island.

TUBERCULOSIS infection is common in the highland zebu cattle of the Southern Highlands Province and in the Sanga (Ankole) herds of Bukoba.

Shortage of staff precluded much research, but work was done on vaccination against BRUCELLOSIS and the effect of certain chemicals on the spores of ANTHRAX. The usual output of vaccines and laboratory services was maintained.

On the animal husbandry side progress was made in the creation of large numbers of grazing reserves and water supplies not only on stock routes but also in many native areas. A novel scheme was the imposition of a cattle cess which yielded some Shs. 200,000 from a million and a quarter head of cattle. The owners willingly paid this tax and it is now being returned to them in the form of improved water supplies, grazing and tsetse control schemes. Lack of staff has prevented the use of artificial insemination, but on the other hand over 100,000 head of scrub stock were castrated.

The primary markets of the Territory sold 275,000 head of cattle at an average price of nearly Shs. 55/- each. It is remarked that if cattle sales are to increase more consumer goods must be offered to natives. Very considerable improvements were effected on the stock routes to the consumer markets and the mortality *en route* was reduced from 15.75% in 1944 to 6.0% in 1945. Complete control of cattle was maintained from the producer to the consumer.

Steady progress was maintained in the improvement of hides and skins, and a commencement was made in the practice of "biffing" hides, this method of removal of pelts being a great improvement on the knife technique. Similarly good progress is recorded in the field of clarified butter, 448 tons being made as opposed to 308 tons in 1944. The incentive to greater production was an increase in the price of milk from 6 to 10 cents (100 cents—Sh. 1/-). In addition to the foregoing over 1,000 tons of ghee, the majority of which was a high standard, were manufactured.

It is most regrettable that both the courses for African veterinary assistants and African animal husbandry assistant had to be closed down owing to the shortage of staff, this was the more unfortunate as these men have well proved their worth.—E. F. PECK.

SCHOENING, H. W. (1946.) **The present status of Newcastle disease in the United States.**—*Proc. 50th ann. Meet. U.S. Live Stk sanit. Ass., 1946.* pp. 176–186. 441

NEWCASTLE DISEASE has been diagnosed in 29 States of the U.S.A. A National Committee on Newcastle disease has been established. It has been decided to use the term "NEWCASTLE DISEASE" in preference to AVIAN PNEUMOENCEPHALITIS. In view of the urgent need for information and a co-ordinated research programme, sub-committees have been set up to consider and promote research under the following headings:—present status of the disease in the U.S.A., losses caused by the disease, diagnosis, the virus and its properties, modes of spread, immunization, experimental field control measures and sanitary procedures: organization and methods of procedure.—F. D. A.

BOOK REVIEWS

SIGURDSSON, J. (1945.) **Studies on the risk of infection with bovine tuberculosis to the rural population. With special reference to pulmonary tuberculosis.** pp. 250. Numerous tables and refs. Copenhagen: Ejnar Munksgaard. London: Oxford University Press. 15s. [Danish summary.] 442

The first part of this book is concerned with a general description of the type determination of *Mycobact. tuberculosis* with special reference to the value of cultural methods in enabling relatively large-scale systematic epidemiological studies to be undertaken on the distribution of bovine TB. in the human population. S. believes that many cases of the pulmonary type of infection in man are attributable to the inhalation of infective particles. An examination of dust from byres where TB-infected cows are housed has shown that viable organisms can be recovered without difficulty.

He postulates that the increase in pulmonary phthisis in the rural population in Scandinavian countries is due to bovine infection; thus in one survey, pulmonary infection due to this type was found in 41 out of 95 (43%) of farmers and their dependants who had been attending cattle as compared with 12 out of 227 (5.3%) in the general population. Another series of figures shows that among patients with pulmonary bovine TB., 94% came from farms in which cattle were extensively affected, whereas amongst urban patients, this type of infection occurred in only 3.6% and was still further reduced to 1.8% if confined to patients who had never been in contact with cattle.

These cases can be clearly differentiated from

the rather acute clinical picture which follows the ingestion of tuberculous milk and characterized by pharyngitis and lymphadenitis where pulmonary involvement may occur later. With regard to the lesions, little difference can be detected between phthisis due to the human and bovine types respectively, with the possible exception that cavitation is rather more frequent with the bovine type of organism.

The book gives a useful account of recent investigations in Denmark and provides up-to-date information on the incidence of TB. in both human and bovine populations.—R. E. GLOVER.

BOURDELLE, E. [Ancien professeur à l'École Vétérinaire d'Alfort, Professeur au Muséum national d'Histoire naturelle], BRESSOU, C. [Directeur de l'École Vétérinaire d'Alfort], & FLORENTIN, P. [Professeur à l'École Vétérinaire de Toulouse]. (1947.) **Technique de dissection des animaux domestiques. [Technique of dissection of the domestic animals.]** pp. 248. 69 figs. Paris: Librairie J. B. Baillière et fils. 8vo. 443

Any book from the hands of these French anatomists commands respect and attention from the reader. This work is concerned with general and special techniques of dissection and any disappointment which might be experienced because it is not an anatomical treatise is soon mitigated when the general excellence of the technical procedures advocated is appreciated; also when it is realized that the major part, which deals with methods of dissection of all the domestic animals, including the fowl, is probably intended for use in conjunction with a work by these authors and MONTANE.

The theme of the first part of the book, which deals with general techniques, is that efficient dissection requires efficient preparation and over this the authors have gone to considerable trouble. Some points raised may be considered obvious, but they are nevertheless of importance. Thus, choice of subject, type of dissection room, instruments required, methods of killing, positioning of the cadaver, etc., are all covered; there follows a more important section on methods of fixation for general dissection and for the injection of blood vessels and lymphatics.

The second part is preceded by a short dissertation on the reasons for dissection and the value to be obtained from it. Opportunity is also taken to remind the student of the golden rule of the dissection room—removal of fat and connective tissue. The regions of the body of all domestic animals are then dealt with systematically, and throughout the script technical procedures are added. The illustrations are not good; there should be more of them. However, it can be said with confidence that anyone with a knowledge of anatomy, or with a textbook of descriptive anatomy to hand, could make a highly efficient dissection by following the instructions.

No dissection room should be without a copy of this book and it should find a place in many experimental laboratories as well as being of assistance to students.—C. W. OTTAWAY.

ALTENBURG, E. (1947.) *Genetics*. pp. xii + 452.

Numerous figs. London: Constable & Co. 16/-. 444

A detailed account of the early theories and practice of genetics covering, in particular, the era of Mendel, de Vries and others and leading on to the complex structure, developed in recent years. It is divided into 20 chapters. The first part is concerned with the detailed cytology of the cell and with the simpler forms of Mendelian hybridization, embracing independent assortment and multiple factors. Later the changes which take place in the chromosome are followed with special reference to linkage, crossing over, meiosis, etc. Finally the production of natural and artificial mutants is discussed.

The book is most readable and serves a particularly useful purpose in drawing attention to the limitations of species modification by genetical means. The sections on the practical application of the Mendelian analysis of inbreeding, limits of selection in a hybrid population and the practical results of selection stress that many of the results achieved by the breeder are attributable to the selection of factors already existing in nature and merely requiring favourable conditions to bring them into prominence. Selection thus has definite limitations and cannot call new genes

into existence, a point sometimes overlooked by the practical breeder. There is an interesting chapter on modifications in chromosomes produced by X-rays, etc., and again the limitations of these methods are discussed critically.

The numerous line drawings enhance the value of the text and should assist the student to grasp the more complex cycles arising when several genes are involved. One may venture to suggest that some of the reproductions are too indistinct to be of much value. There is also a tendency towards undue repetition and emphasis arising, doubtless, from the desire of the author to drive home some of the fundamental principles. These, however, are minor points which do not detract from the general excellence of the book.

—R. E. GLOVER.

KOBOZIEFF, N. [Docteur ès Sciences, Directeur du Laboratoire de Génétique de l'École Nationale Vétérinaire d'Alfort], & POMRIASKIN-SKY-KOBOZIEFF, N. A. [Attachée au Laboratoire de Génétique à l'École Nationale Vétérinaire d'Alfort]. (1948.) *Précis de génétique appliquée à la médecine vétérinaire*. [Review of genetics in its application to veterinary medicine.] pp. 140. 80 figs. Paris: Vigot Frères. [8vo.] 445

From the Foreword this book appears to be specifically directed to the veterinary practitioner with the avowed aim of showing that Genetics is not merely an academic science but that, on the contrary, it has a number of important practical applications for animal breeding. The text is divided into seven parts, each dealing with a separate aspect of the subject: Part I comprises a brief review of the basic facts of pure genetics; Part II deals with the hereditary transmission of some normal or favourable anatomical and physiological characters in domestic species, and with sex-linkage in poultry; Part III is an account of hereditary anomalies and diseases, the major portion of which deals with lethal mutations; Parts IV–VII are discussions on the genetical aspects of sterility, abortion, cancer and immunity.

Even allowing for its specific application to veterinary matters, this book will inevitably give the ignorant an over-simplified and erroneous conception of the substance of modern genetics. The concentration on simple Mendelism may regrettably convey the impression that all inherited characters are dependent for their expression on a single pair of genes. Thus, for example, in Table I, p. 37, we find that, with regard to cattle, levels of milk yield and butter fat on the one hand and the presence or absence of horns on the other are grouped together as having the same mode of inheritance, without any distinction being made,

either in the table or the text, or indication that the former are multi-factorial characters whilst the latter is mono-factorial.

The tabulated lists of hereditary anomalies and diseases of animals and poultry are instructive, but present an incomplete and, in some instances, incorrect survey. For example, few geneticists would agree that osteoporosis and rickets in horses are hereditary. In Table III, p. 62, the achondroplasia of calves described by CARMICHAEL (1933) in Nganda cattle is wrongly classified as a dominant mutation, although in the text, p. 85, it is correctly included as a recessive.

The inclusion of sections dealing with the genetical aspects of sterility and abortion is useful, in that attention is directed to the possible role of hereditary factors in the aetiology of reproductive disorders. Most British veterinarians will probably disagree, however, with the undue emphasis which the authors, following ALBRECHTSEN, attribute to chronic uterine inflammation in the causation of ovarian disorders such as persistent corpus luteum or cyst formation. In dealing with abortion due to lethal genes, no mention is made to the possibility of early foetal resorption in cattle, or to the well-known work of HAMMOND on foetal atrophy in the rabbit and pig.

In spite of shortcomings of the kind noted above, the book provides a useful, if uncritical, compilation of hereditary abnormalities in domestic livestock. A valuable feature is its citation of rarer European, including Russian, references. The authors, excusably in view of the date of publication, omit mention to recent work, chiefly American, within the scope of their text. Less excusable, however, is the statement on p. 41 that the genes for the silver and gold plumage character in the fowl were first discovered by SEREBROVSKY and his collaborators in the U.S.S.R.—surely a lamentable lapse on the part of the authors regarding the significance of the classic investigations on sex-linked inheritance of BATESON, PUNNETT and their co-workers in Gt. Britain and of MORGAN, GOODALE, PEARL and others in the U.S.A.—N. J. SCORGIE.

MATHIS, C. [Ancien Directeur de l'Institut Pasteur de l'A.O.F., Membre correspondant de l'Académie de Médecine]. (1946.) *L'Oeuvre des Pasteuriens en Afrique Noire. Afrique Occidentale Française. [The work of Pasteur's followers in darkest Africa. French West Africa.]* pp. xi + 580. 32 plates. Numerous refs. Paris: Presses Universitaires. 446

A historical introduction draws attention to the benefits conferred on Africa, and particularly as applied to French West Africa by the application of the discoveries and methods of Pasteur and

his disciples to the problems of tropical countries. The main steps of the advancement in knowledge are emphasized, also the provision of scientific, medical and veterinary services, from 1896, the date of the founding of the first microbiological laboratory at Saint-Louis-du-Senegal, to 1937 when a new Pasteur Institute for West Africa was opened at Dakar. Attention is drawn to the enthusiasm, and even heroism, of the pioneers in the scientific exploration of an undeveloped territory.

The book is divided into seven parts, dealing with the growth of laboratory services, with the great men who have been associated with these services, and their main contributions to scientific discovery.

The work on human diseases is dealt with and also the establishment of the Pasteur Institute at Kindia. This institute was under the direction of the veterinary scientists WILBERT and DELORME, with the principal object of studying the diseases on monkeys, in view of their use as experimental animals in the study of human disease. This institute was also responsible for the preparation of small-pox and BCG vaccines, and for research work on anti-locust measures. In another section veterinary pathology is discussed, giving a sketch of the gradual advancement of knowledge in veterinary problems in this part of Africa. Trypanosomiasis, piroplasmosis, anthrax, tuberculosis, ovine pasteurellosis, fowl spirochaetosis, rinderpest, horse sickness, sheep pox, bovine pleuro-pneumonia, epizootic lymphangitis, camel actinomycosis and ringworm of camels are dealt with. This section is of especial interest as it allows a comparison of the French and British approach to these subjects, and contains notes of observations which might be overlooked by those only acquainted with British work. There is an interesting list of the blood parasites of animals in French West Africa. References are given to the publications recording the various observations and investigations.—U. F. RICHARDSON.

GREAVES, J. E. [M.S., Ph.D., Professor of Bacteriology, Utah State Agricultural College], & GREAVES, E. O. [M.S., Ph.D., Professor of Nutrition and Dean of the School of Home Economics, Utah State Agricultural College, Logan, Utah]. (1946.) *Elementary bacteriology*. pp. xvii + 618. 169 figs. Philadelphia & London: W. B. Saunders Company. 5th edit. 8vo. 20s. 447

The modest title of this attractive little textbook is more than fulfilled by its interesting and informative contents. The 49 chapters give an up-to-date picture of the highly important position in nature occupied by micro-organisms. Consideration is given to their widespread activities

in agriculture, industry and in disease. The greater part of the text is devoted to general bacteriology and to a broad study of the activities of micro-organisms as distinct from the diseases caused by the well-known pathogens. Sufficient, however, is said on this latter aspect and on immunity, chemotherapy, and epidemiology, at least as regards the medical field, to give the newcomer to bacteriology an interesting and accurate impression of the expanding scene. The scope of the book does not allow any special attention to be given to peculiarly veterinary problems. The book gives a remarkable amount of information despite the wide field covered, but the style in the main has to be brief and concise. The historical background to the many subdivisions of the subject is never neglected and each chapter gives references to the literature and to suitable textbooks for more advanced study.—J. KEEPIE.

MCDONAGH, J. E. R. [F.R.C.S.]. (1946.) **The Nature of Disease up to date. An outline of a Unitary Theory.** [Edited by CLEMENT, M.] pp. 11 + 168. 13 figs. 17 refs. London: William Heinemann. 15s. **448**

The ancient Chinese attributed disease to an imbalance of two opposing forces, Yang and Yin, and it can be seen from GUTHRIE'S "History of Medicine" (A History of Medicine. Douglas Guthrie. 1945. Thomas Nelson & Sons, Ltd., London) that similar concepts have been largely continued throughout the ages. ASCLEPIADES believed that disease was due to over-contraction or expansion of the "pores". HIPPOCRATES and GALEN believed the body to be composed of blood, phlegm, yellow bile and black bile and disease was due to an imbalance between these elements—in mediaeval times the humours became "temperaments". In the sixteenth century PARACELSUS believed that disease was due to an imbalance of the three elements, sulphur, mercury and salt. In the eighteenth century HOFFMANN believed that an excess or deficiency of tonus caused disease, and JOHN BROWN an excess or lack of "stimulation".

During the eighteenth and nineteenth centuries, however, the study of anatomy, physiology and pathology revealed the multiple causation of disease. It is now generally accepted that health depends on the maintenance of a delicate balance between numerous constituents of the body and that invasion by various infective agents is responsible for one very large group of diseases.

Nevertheless, the old concept still has its adherents, and in his book MCDONAGH attempts to present a "unitary" theory of disease. All the

arguments cannot be followed here, but the general tone of the book can be judged from the following passage:—"The generalized form of cerebral oedema occurs in dogs as it does in man, but in the former it is much more severe, and recovery is infrequent. The 'mad itch', or so-called 'Aujeszky's disease', is a common symptom of the nervous type of distemper in dogs, as is 'scrapie' in sheep. In all animals, the ophthalmic type of distemper is more common than the corresponding type of influenza in man. I attribute the greater frequency of this type in animals to the much greater depth of the anterior chamber of the eye, which permits a larger amount of over-contracted protein to accumulate therein".

MCDONAGH believes that "The manifestations of disease produced in the animal kingdom, and the tissues and organs in which they appear, are determined by the part of the protein which suffers damage, whilst the kind of lesion resulting in consequence is determined by whether the protein is more over-expanded than over-contracted, or *vice versa*".

Most workers at the present time will probably feel that disease may be due to a great variety of different causes and that the time may never arrive when we can return to a unitary theory, which is, in fact, not very different from that of the ancient Chinese.—J. FRANCIS.

NICAUD, P. (1946.) *La périartérite noueuse. Maladie de Kussmaul.* [Periarteritis nodosa. Kussmaul's disease.] pp. 125. Paris: Masson et Cie. Fr. 255. Numerous refs., 18 figs. **449**

The history of this disease of the arteries, its clinical manifestations and the different forms and syndromes are described, illustrated both by photographs and photomicrographs of many vascular lesions. A section deals with the pathological anatomy, diagnosis and prognosis, and treatment.

The theories of bacterial and virus aetiology are given considerable space, the researches of RICH and other Americans are accorded but little. The possibility of a helminthic cause is also discussed. The vast amount of research in the direction of anaphylactic hypersensitivity is not dealt with and, despite the inconclusive nature of the evidence, the author seems to consider the infectious hypothesis the most likely.

The book deals mainly with the disease as it occurs in man, and the work of the veterinarians JOEST, and LÜPKE and JAEGER is given due credit, but these are the only veterinary references. Format, type, paper and photomicrographs, are all excellent.—L. M. MARKSON.

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